

LITHOTOMY:  
OR, A  
TREATISE  
OF THE  
Extracting of the Stone  
out of the Bladder.

Wherein

An Account is given of the Various Instruments used, and the Method observed in that Curious, but difficult, part of Chirurgery.

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*Illustrated with Twenty Copper Plates.*

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Written in *French*, by *Monsieur Tolet*, Lithotomist  
in the Hospital of the *Charity* at *Paris*.

---

Translated into *English*, by *A. Lovell*.

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L O N D O N,

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*To the Ingenious and Expert  
Chirurgion, Mr. Tho. Hobbs,  
Lithotomist in the Hospital of St. Bar-  
tholomew in London.*

SIR,

**I** Confess it is but a weak  
Apology for my Con-  
fidence in prefixing your  
Name to this Book, to  
tell you that I can more  
easily satisfy the World,  
than your self in making  
this Dedication; though  
indeed it be all that I  
have to say for my self,

A 2

for

*The Epistle Dedicatory.*

for this Trouble I give  
you. The truth is, Sir,  
since most Books now a-  
days do court, what but  
a few deserve, I mean,  
Protection; as I would  
not be singular in Pub-  
lishing this Translation  
without a Patron, so I  
durst not be so unjust to  
the intrinsick value of  
the Treatise, as to send it  
into the *English* World no  
otherways provided than  
with the Credentials of a  
specious recommendati-  
on to the train of some  
great

*The Epistle Dedicatory.*

e great Man, who, perhaps  
r, after all, would not admit  
- it into his Family with-  
it out your Approbation. It  
a, was therefore in imitati-  
d on of the Ingenious Au-  
o- thor of this Book, who  
n gave me a Precedent for  
I Dedication, that follow-  
to ing the guidance of Uni-  
of versal, and therefore least  
it erring Fame, I was led to  
no your Door, there to leave  
an this Foreign Child, which  
a I have taught to speak (I  
i- hope) intelligible *English*,  
ne to be by you disposed of  
at in

*The Epistle Dedicatory.*

in the World, according  
as you shall think it de-  
serves, & as you are plea-  
sed to give it a Character.  
If it may be able to serve  
those that serve you in  
that Famous Hospital,  
where you successfully  
Operate, or prove Useful  
to any that profess *Litho-*  
*tomy*, that laudable, but  
difficult and dangerous  
part of *Chirurgery*; you are  
in the judgment of most  
men the fittest Judge; so  
that the Publick (I make  
no doubt) will justifie my  
Con-



*The Epistle Dedicatory.*

Conduct in submitting it  
to your Censure. But, Sir,  
how you your self will  
Interpret this attempt of  
mine, I dare not affirm;  
seeing Fortune hath not  
encouraged me to it by  
intitling me to those free-  
doms that mutual Con-  
versation & long Friend-  
ship do allow: However,  
Sir, I will not despair but  
that the kind Acceptance  
my endeavours shall meet  
with in the World, will so  
far interceed for me, that  
what is intended, and re-  
ally

*The Epistle Dedicatory.*

ally found to conduce to  
Publick Good, will not be  
thought by you to want  
any private Motives to  
commend it to your Pa-  
tronage. I shall say no  
more, lest by seeming to  
know you better than in-  
deed I do, I should spoil  
my own Plea, and appear  
to be an Intimate Friend,  
when in reality I am,

Sir,

*Your Humble Servant,*

A. Lovell.

*London, Sept. 23.*  
1682.

(1)

A  
TREATISE  
OF  
**Lithotomy:**  
OR,  
Of the Extraction of the  
*Stone out of the Bladder.*

CHAP. I.

*What is meant by Lithotomy.*

**L**ithotomy, according to the Etymology of the word, signifies Cutting of the Stone. It had been a more proper way of speaking, to have used a term that might have expressed the part which is opened by the edge of  
B the

the Instrument, because the division of cutting of the Stone happens contrary to the intention of the Artift; however I shall make use of the word *Lithotomy* which is in vogue, and understood by all that are skilful in the Profession. That we may dive into the meaning, and give the definition of the thing; it is an Operation in *Chirurgery*, practised for the Extracting of Preter-natural hard Bodies which are retained in the Bladder.

By Preter-natural Bodies is to be understood, all things that are retained within the Body of Man contrary to the ordinary course of Nature: And seeing sometimes there are several things in the Bladder which require the opening of it we have put in the definition Preter-natural Bodies, rather than the Stone; and for clearer distinctions sake, we have subjoyned that *Lithotomy* is only practised for such as are hard, and retained in the Bladder.

## C H A P. II.

*Observations upon the Parts of the  
Body of Man.*

**T**HE Vessels and Pores of the Glandules are the usual Conduits through which the *Corpuscules* or little Bodies pass and are filtrated, when their bigness and figure makes them fit to be received there; but if there be no proportion betwixt the Conduit-pipes and the Liquors which should pass through them, they stop: On the contrary, if the Humours have a very rapid motion, they distend the passages, and many times break them.

Whatever the impulse of the Humours may be, their motion abates the more that they communicate it; they make no sensible attempt to get out when they are moved on every side in a place that can stretch and be enlarged to a certain bigness, as the Bladder and the Basons of the Kidneys: But when the place wherein they are contained is full, if they be not



evacuated, they are the causes of several Diseases; for the Humours consisting of parts of different figure or bigness, it follows that sometimes they cannot glide through one and the same passage. It is true that Bodies of the like or different extent may pass through one and the same Channel; the contrary is not impossible, and may give a beginning to those Tumors, which swelling outwardly higher than the surface of the Body, go by the Name of *Abscesses*, after the same manner as the internal collections have other appellations: And if the same Humours be composed of unequal parts, and meet together in a narrow place that is full of windings, some of them joyn together, and by their conjunction form a Body that in respect of the rest is solid. This Body by its continuance there, and the apposition of other *Corpuscles*, becomes more sensible to us; it hardens according as the rough parts closely embrace one another, and the other separate and continue their motion.

After the same manner as it is in Brooks and Rivulets, where the small stones  
separate

separate and retain the Mud; so is it in the Glandules through which the Humours are filtrated: And in the Pipes where Water runs in great quantity; though they be streight, Earth and other Sandy substances mingled with the Water cleave close and stick together, and there form a stony Crust, which in time hinders the passage of the Waters.

### C H A P. III.

#### *Of the Causes of the Stone.*

**O**UR Food liquified is not destroyed, and the diversity of Aliments makes it apparent, that they have parts different in Bigness, Figure, and Number; the most Nourishing, as Jellies and strong Broths have all these qualities, seeing the Juices of Animals which are the basis of them are taken from the soft and hard parts of the Bodies with which they were assimilated, or being still within the Vessels and amongst the Glandules, tended to that assimilation; or from those Bodies that were to be retained or voided,

by Physicians called *Retenta* or *Excreta*.

Other kinds of Food contain also parts of a different Nature because Elementary Bodies are mixed, so that a simple unmixt Body is not to be found. The Air wherein we live, and which we breathe, is full of little Bodies separated from different Substances, and contributes to our Health and Sickness. If then, one breathe a thick and gross Air, if he drink thick and rough Wines that are not fine, muddy Waters of Lakes into which several Brooks empty themselves, or such as Petrifie other Bodies, or Snow-water, which contain matters that being frequently drank may lessen the motion of the Humours; if he eat a great deal of unleavened Bread, Water-fowl, Curds, Pap, Old Cheese, hard Eggs, stony Fruits that are tart and not fully Ripe; as Quinces, Medlars, Pears; if he feed on Beet, Pork, or the Legs and Feet of Animals, Eels, Salt and Spiced Meats; or if he frequently make use of Medicines which cause the more subtile parts to transpire as Sudorificks and Diureticks: If he bestir himself too violently at any time,

and

and especially after eating. The long use, or the excess of these things, will be the cause of the Stone; as likewise too much idleness, and sleeping too long upon the back, because the Earthy parts of gross Food may meet together in several places, and disturbing one another, stop the passage.

If those who take the greatest care of their Health, are not exempted from Living on Food which contains slimy parts, as strong Broths, what may we think must befall them who to excess eat and drink indifferently of all things, or indeed but to Moderation, since our Victuals participate of a Terrestrial Matter mingled with a kind of Salt; and Chymistry teaches us, that in the Body of Man there are some Juices which dissolve and liquifie our Food, and others again that thicken it; whence it may be concluded, that if the one of these Liquors by mingling with our Food, renders it fluid; but then being confusedly hurried away, and conveyed by streighter passages, it may be that the same Liquor does escape, and more easily glide away



than the Nourishment that is retained in, and does Nourish the part, or even destroy it, according to the proportion or disproportion of the Humours which in general may be called Alimentary. It is much the same if a Terrestrial Juice remain with the Food after Chylification, for being circulated through all the parts of the Body, if it transpire not, it will clog and obstruct, and many parts of the same Nature joyning together, will then produce a Stone.

#### CH A P. IV.

*Of the Consequences that are drawn from the foregoing Chapter, and how the Stone is defined.*

**T**HE Blood is carried to all the parts of the Body; but if its motion be more rapid than is usual, it may distend the Capsules and Ureters, and make some drops of Blood fall into the Bladder, or other gross Particles mingle with the Urine, which will then be red, bricky, and gravelly.

People



People do not always make water so soon as the Serosity is separated from the mass of Blood: If there be a small Stone in the Kidney it may ulcerate it: If it descends towards the head of the Ureter, and when it is rough or of an excessive bigness in respect of the narrowness of the passage, it stops it, or by the impulse and force of the Urine that follows, making a great dilatation, it opens a passage for it self unto the very Bladder, the patient in the meantime, suffering most violent Nephritick Colicks, which sometimes are the cause of his Death. On the contrary every soft part having a peculiar sense of feeling, if the Kidneys have no exquisite feeling, and the Urine or small Stones have by little and little dilated their passages, the Glandules will separate and retain but a very small matter, all that was contained with the Blood will pass through; and as through a Sieve, several sorts of grain may pass after that the holes are enlarged, so Gravel and little Stones may be conveyed into the Bladder, with the Urine, and the Patient

Patient hardly feel any pain or trouble

It is to no purpose to alleadge the the dryness, or close Union of the parts that compose the Kidneys does contribute to the forming of the Stone; because in the Dead Bodies of those that have been troubled with the Stone, it is to be observed that the Kidneys are moist and soft; and it is certain that in living Bodies they are continually moistened with some Liquor: And besides it cannot be said that their Bladder is narrow and dry, although Stones are more frequently formed there, than in any other part of the Body.

It is unjust to accuse our Parents to make us bear more patiently the pains we suffer, because in every body the causes of the Stone may be sufficiently evinced, without imputing them to those to whom we owe our life, and without blaming of them, reason may be given, why we see Children subjected to the Stone, whose Fathers and Mothers enjoy perfect health.

We are to conclude that Age and Excesses render the parts weak, whose

Fibre

fibres being relaxed give occasion to obstructions in Old People, as well as in Children; because the abundance of humidity slackens the motion, and the earthy, slimy, and superfluous matters, that are not evacuated, occasion several diseases, as well as the Stone.

Many distempers are bred according to the diversity of the food that one takes. Thus a man shall be afflicted with the Stone, if he feed on coarse food, and which may easily coagulate in the Body. There are not wanting sad instances of this; persons of different Ages, Sexes and conditions, are subject to it, and most of those who are troubled with the Stone, and who are to be seen in the Hospitals of *Paris*, come from the Country, where most part of their food is terrestrial and coarse; and many little Children who live in that manner are cut there.

Stones are formed in all the parts of the Body, and according to their dimensions that which stops the passage takes the name of Sand, Gravel, or Stone: experience confirms this; for  
Stones

Stones are found in the Lungs, the Liver, the Gall, the Spleen, the Kidney &c. *Paræus lib. 25. Chap. 15.* reports that he took one out of a mans Knee. Some are found in the Heart: those which are found in the Nerves are by *Paulus Aegineta* named *nodosæ nervorum concretiones* knotty concretions of the Nerves. It is likewise observed that Stony crusts are formed about the Teeth. I know a man that above twenty years ago voided one by the Navel: it was of the bigness of an Olive Stone; and the man is still alive. Stones are bred most frequently in the Kidneys and Bladder, because these parts are appointed for separating and containing the serosity which always carries along with it an earthy Sediment that accompanies the Urine and the Stones of the Kidneys and Bladder give greater pains to the Patient because they stop the emission of Urine or irritate the parts whose use is frequent, and the sense more exquisite than that of many others. In a word, we may conclude, that the Stone is a preternatural hard body begotten



egotten of the terrestrial and slimy  
parts of our Food.

We have put in the definition the  
word slimy, to distinguish it from Vis-  
cus; because Viscous things do not  
arden in a place where there is moderate  
heat and humidity: but such as are  
slimy, like the White of an Egg, by little  
and little grow hard, and incorporate  
with the earthy parts they contain, when  
they have long continued in luke-warm  
liquors.

This proposition may be confirmed  
by the experience of those who render  
an Oily and Fat Urine, and who are  
not troubled with the Stone; and be-  
cause unctuous and viscous Medicines,  
such as Turpentine, give ease to those  
that are afflicted with Gravel: More-  
over, clear and slimy Urine is reckoned  
among the signs of the Stone in the  
bladder.

Authors are divided about the deci-  
ding of the question whether or not the  
Stone be a disease if all their reasons be  
considered, it may take the name of a  
disease, as well as that of a cause.

C H A P.



## C H A P. V.

*How Stones are formed and grow in the Bladder.*

**T**Here needs no more but a grain of Sand, or any hard Body will serve for a Center, or Foundation for monstrous Stones, which cause terror in those that behold them, and more frequently death to those from whom they are taken.

The Sand, and other things that are mingled with the Urine, sometimes are not wholly voided out, their continuance within gives time to what remains to gather together in some place; and after that one hath made Water, if there be still in the Bladder a little sand and a slimy substance like the white of an Egg, preternatural heat and the separation and evacuation of the humidity make them joyn together in the same manner as the Saline and Tartarous parts of Wine; and the Urine of those that are

T A T T

trouble

troubled with Gravel which distills into the Bladder, being mingled with other Terrestrial parts, furnishes matter that joyning with that which remained there before, forms and augments the Stone : Experience informs us that Stones are sometimes found which are in a manner like a mixture of Sand with the Whites of Eggs, having so little Solidity, that one cannot avoid the breaking of them betwixt the Teeth of the Forceps.

If a little Sand may be the Center or Kernel of the biggest Stones, a hard body got into the Bladder and remaining there, may likewise be as we have seen in an *Italian* Souldier ; who to ease himself of a pain that he felt, thrust into his Yard the Tag of a Point about Two Inches long, which slipt into his Bladder, and there continued Eight Months. In the Spring of the year 1677, he came to the Hospital of the Charity at *Paris*, where without much minding the relation he gave of his condition, I was assured by the catheter that he had a Stone in the Bladder, he

he was cut; and the Iron Tag tak-  
 out; about which a Stone was for-  
 ed, that hindered not but that it might  
 be seen in several parts: *Baréus, lib. 2*  
*chap. 15.* Reports a like case. *Fab-*  
*rius Hildanus L. de Lith, c. 3: col.*  
 writes that one of Geneva having  
 the space of Twenty Eight years com-  
 plained of the Stone, at length died  
 and that he was found to have a Stone  
 the Kernel of which was a Leaden Bulle  
 petrified, which he had received by  
 Musket-shot, and retained all that while.  
*Joseph Covallart, Obs. VII.* of his op-  
 erations, assures us that he had seen  
 Stone, the Center whereof was a Mu-  
 ket Bullet which a Gentleman had re-  
 ceived in the Bladder, Five years before  
 he was cut of it. *See also* *Brux. 211*  
 I had in cure a young man, who  
 had been cut at the Age of Four years  
 Old, and who was troubled with  
 Fistula: since that time he had discharg-  
 ed Urine unto the Scrotum, where by  
 degrees a Stone was formed about the  
 bigness of a little Pullers Egg, ending  
 in a point like the Stalke of a Pear.

It cannot be determined how long time the Stone is in forming and growing; that depends upon the conjunction of the parts of the Sand, and the sudden and quick secretion that is made of it in the Bladder: besides, it may be, the Stone continues at a certain Size, because new Corpuscles do not always cleave and stick to it. I know one that hath had one for several years, seated in the beginning of the *Perineum*, near the *Scrotum*, without any sign of dilatation or sense of Pain.

The growth of Stones in the Bladder happens not without alteration of that part; which becomes weaker according as the Stone increases.

This remark affords us a reason why the Bladder of those that are troubled with the Stone is thicker than naturally it should be, which is only caused by the debility of the part; because not being able to send back the superfluous part of the Blood, it swells therewith as the womb in Women when they are with Child, and the parts where there hath been a Fracture, a great Contusion:

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he was cut, and the Iron Tag taken out; about which a Stone was formed, that hindred not but that it might be seen in several parts. *Paréus, lib. 2. chap. 15.* Reports a like case. *Fabritius Hildanus L. de Lith. c. 3. col.* writes that one of Geneva having for the space of Twenty Eight years complained of the Stone, at length died, and that he was found to have a Stone the Kernel of which was a Leaden Bullet petrified, which he had received by Musket-shot, and retained all that while. *Joseph Covallart, Obs. VII.* of his operations, assures us that he had seen a Stone, the Center whereof was a Musket Bullet which a Gentleman had received in the Bladder, Five years before he was cut of it.

I had in cure a young man, who had been cut at the Age of Four years Old, and who was troubled with a Fistula: since that time he had discharged Urine unto the Scrotum, where by degrees a Stone was formed about the bigness of a little Pullets Egg, ending in a point like the Stalke of a Pear.

It cannot be determined how long time the Stone is in forming and growing; that depends upon the conjunction of the parts of the Sand, and the sudden and quick secretion that is made of it in the Bladder: besides, it may be, the Stone continues at a certain Size, because new Corpuscles do not always cleave and stick to it. I know one that hath had one for several years, seated in the beginning of the *Perineum*, near the *Scrotum*, without any sign of dilatation or sense of Pain.

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or a Wound ; and in the same manner as by Suppuration, or the Transpiration of Wounds, Fractures and Contusions, the Evacuations that happen after a Woman is brought to bed, the parts return to their natural thickness, so the Bladder being discharged of the burden that incommoded it, and besides assisted by Medicines and a regular Diet, is restored again to its former state. *Bev. c. 4. de Cal. Ren. & Ves.*

## C H A P. VI.

### *Of the differences of Stones.*

**T**HE most considerable difference in Stones, is in respect of the magnitude. The least Stones of Children of Three, Four, or Five Years Old are like great Pease; or of the bigness of Cherries. Those of Seven, Nine, Twelve to Fifteen Years Old, have them a little bigger. In men grown up, who are of Middle age; and in Old men to the last period of life, Stones are found of the bigness of a Hens Egg.

I pretend not to determine the exact Size of the Stones of every Age, there is no rule for it; and it is sufficient to remark what is commonly observed; for sometimes smaller Stones are cut from Children and Men, and at other times some of such a bigness that with relation to the subject, they are called Monstrous.

The thing contained gives sometimes the Figure to that which environs it, but Stones rather take than give it. The Bladder, the Urine, or the Pressure and Justling of other Bodies, are the causes of many differences; do not we see that water hollows Rocks, though it fall drop by drop? It may be observed when the Stone is formed by minute Bodies that have Angles, the Urine or the Salt of it blunts the points of them, and the wet Sand not having firmness enough, lyes flat by the sides of the Bladder when there is little Urine in it, and forms a flat and smooth Stone, approaching to the Oval Figure of the Cavity of the place, but if the minute Bodies of the Stones are Round, they



Roll in the Bladder from one side to the other; and when they joyn together and are dry, they make rough Stones of a Spherical Circumference, with very great Pores; as is represented by the Figures, the Superficies whereof are unequal like to Strawberries or Mulberries. On the contrary if they be composed of minute Bodies that draw near to a Triangular Figure, the contrary will be found, and they will have smooth and less unequal Surfaces.

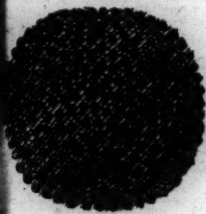
A, B, Gravelly Stones which are the Roundest.

C, D, E, F, G, Stones that have no other name then that of the things they resemble; as an Almond, a Hens Egg, &c.

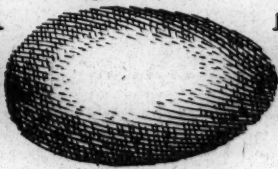
It is also to be observed that there are many more flat Stones smooth and polished in the Surface, than round and rough: And this makes it probable that most of them are formed of minute Particles, the points whereof are blunted.

As the Surface and thickness of Stones are not always uniform, so their Particles are variously Figured or disposed. Indeed there is as little reason to affirm

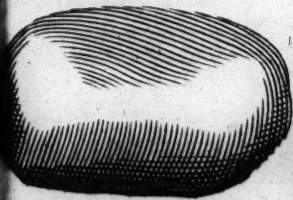
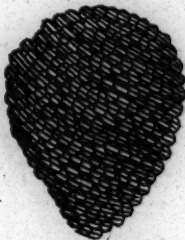
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That all kinds of food are of the same nature, as that all the things whereof the Stone is formed, are alike: And though it were granted that the Stony Corpuscles were of one and the same Figure; yet the difference of their bigness, and of their modification and site by reason of the inequality of their Angles, which would entangle them one with another, must needs give place for greater Pores, than if they were disposed in the manner most suitable to their nature for making a smaller bulk: And besides, betwixt the great Pores of Globular Corpuscles, other little Bodies of a different shape may enter, which may diminish the greatness of these Pores.

The Corpuscles of Stones being small, the Stone will have a fine grain and be more polished and smooth, the Corpuscles that are bigg and Globular, make the grain course, and the Stones lighter; because their Pores are full of Urine, or of some other very subtile matter much lighter than the parts of the Stone; hence it is, that of two Stones of the same bigness the rougher or less

polished shall be the lighter, and a dissolving Menstruum will Act much sooner upon those which are Globular and unequal, than upon those which are Smoother and more polished in their Surfaces.

When the Stone begins to be formed by Globular Corpuscles, they are such sort disposed, that they contain humidity in their Pores; the Stone in a short time growing in bigness, the Water or Humidity is by heat rendered more subtile according as the Stone grows harder, and then it acquires motion that may drive the parts from the Center, and making to it self a passage bigg enough to transpire through, but too little to allow an entry to other Terrestrial Corpuscles, that Stone will be hollow at the Center.

Corpuscles that come nearest a Triangle, cement and link the other Particles together; because Triangular and Square Figures, are more capable to hinder motion than *Spherical*.

The Stones whose Pores are full of Humidity, are the softer, and that softness will be more or less, according to



to the quantity of Aquosity contained betwixt the Center and the Surface; and therefore they are called soft Stones if there be much Humidity; and hard, if there be none, and that the parts of the Stone be closely compacted. It is certain, the hard are heavier than the soft.

Sometimes Stones are taken out whose Center is Globular, and the Surface smooth; the reason is because betwixt the Pores of the parts of the Kernel, other smaller, and less round Corpuscles are placed, and form a stony crust which has a finer Grain. On the contrary the minute Bodies having formed an equal thickness from the Kernal, if many Globular Corpuscles joyn with them before the Stone be hardned, it will be unequal and rough in the Surface.

If the Stone be formed in the Kidney, and take its growth there, it will be Sized according to the shape of the Cavities wherein its Branches do extend themselves. Hence it follows that a Stone formed and augmented in the Neck of the Bladder, will have a Figure Oblong, Cilindrical, or like a Pear, having one

end smaller than the other ; but if the  
 Particles begin to joyn higher toward  
 the bottom of the Bladder, it is not in-  
 pugnant but that at the same time the  
 Corpuscles may be separated without  
 touching one another amongst the Wrin-  
 kles and Rugosities of the Bladder  
 and there form Stones which change  
 their place, and which by mutual colli-  
 sion become smooth; as with two Stones  
 of a moderate hardness and a little Water  
 we may make the experiment, and they  
 will have one or more sides flat, as is re-  
 presented in the figures contained in the  
 little space of the former cut.

This may serve for instruction to those  
 who have not seen the operation often  
 performed; because considering the stones  
 they will be able to judge if there be many  
 ny, which are sometimes uniform, some-  
 times unequal in thickness. It is rare to  
 find Stones covered with a coat, or film of  
 humor; there are some that are sticking  
 like those which have Prickles and Asper-  
 ities, which are called Gravelly Stones  
 to distinguish them from those which are  
 Smooth, Round, or Oval. Some are hard

er and more ponderous ; others are  
 gravelly only in the Center, or in the Cir-  
 cumference, some are found to be hollow  
 within, and others again solid, as in their  
 superficies differences are likewise taken  
 from the Scituation, because there may  
 be Stones in the *Urethra*, the *Perineum*,  
 the neck of the Bladder, the bottom of it,  
 betwixt its Tunicles, in the *Ureters*, the  
 Kidneys, and other parts of the Body. In  
 the gall-bladder some are found of a gray-  
 ish colour ; those of the Joints and Phleg-  
 matick Abscesses are Whitish and those of  
 the Kidneys and the Bladder are Reddish,  
 Grayish, Whitish or of a colour near to  
 these.

We must not forget the number seeing  
 it is sometimes excessive, and that some-  
 times there have been found in People sub-  
 ject to the Stone to the number of Twen-  
 ty, Fourty or Sixty stones ; but the num-  
 ber is not to be limited no more than the  
 bigness, because many Stones may be for-  
 med at the same time, or successively,  
 and the fragments that break off from  
 them by grating, produce other Stones ;  
 and that is the reason that some are big-  
 ger

ger than others. If a Stone have several flat sides, there will be commonly three Stones; there may be also more, or only but two.

Stones that are cut out of Mans body are not so smooth nor so hard as the Pebbles of the Earth; And there are not many adherent Stones as is believed, you except those that have a coat, or priacles. The smoothest are not extracted without pain if they be large and the passage be not sufficiently dilated, or if they be not rightly laid hold off by the Forceps, or if the *Membranous* parts be doubled through which they are pulled out. It is very hard to judge whether the Stone adheres before the operation.

## CHAP. VII.

*Of the Diagnostick and Prognostick signs of the Stone.*

**I**F we reflect on the causes of Stones and their differences, we may observe the diversity of their signs, of which the First discover that there is a Stone, the Second if there be many, and the Third if the effects and consequences of them

will

will be dangerous. The signs that discover to us the Stone or the number, are called *Diagnosticks*, and those which make us judge of the consequences, are named *Prognosticks*.

For facilitating the means to know if the Stone is in the Kidneys and that it descends into the Bladder, we cannot cite a better Master than *Galen*, book vi. of *Places affec. chap. 2.* who describes the signs of the Stone different from those of other Colicks. A straining to vomit, and great and frequent vomitings are much more troublesome to those that have the Colick; and then they vomit more *Pituitous* and Corrupt Matter than those that have the Stone. They are more bound and break no wind neither upwards nor downwards; The Colick seems often to move and take up more place, and sometimes it encreases in diverse parts; but the Stone Colick torments in the same place without intermission. And though pain that afflicts a place higher than the situation of the Kidneys be always produced by the Colick, yet it does not follow that that which is fixed in the region of



of the Kidneys, is an evident sign of the Stone; that scituation signifies nothing at all to distinguish it, because with the marks the Urine must also be examined. Those that are subject to the Stone at the beginning render a clear and pure Urine, and in the following days something troubled is to be observed which subsides to the bottom, and at length it becomes all Sandy and Gravelly; which happens not to those who being free from the Stone, are tormented with the Colic because if they render any gross excrements, one would say that there was Flatusity in them, and many times they swim on the top of the water, being of a Consistency like to the Urine of an Ox. Moreover these great pains of the Colic are much sooner eased by laxative Glysters, than if they proceeded from the Stone. It happens sometimes that the Colick ceases by the voiding of some corrupt humor, and then it is a remedy that not only eases but cures and discovers the disease: In a word, as the one is cured by voiding of cold Humors, so the other is delivered from their distemper by voiding

ing the Stone with the Urine, and at the same time we may know what part suffers.

We have said that the Matter of Stones are all kinds of Slimy and Terrestrial Substances linked together according to the proportion of more or less that forms a hard Body. That Stones forced against the side of the Bladder, cause pain, Inflammation, Ulcers, and make one void purulent matter in the same Manner as the Acrimony of Humors, of Urine and Abscesses. Little Stones may come out with the Urine: Sometimes they stop in the *Sphincter* or *Urethra*; they hurt the Nerves of the neck of the Bladder which terminate in the circle or crown that is the beginning of the Glans; they may in like manner if they be bigg lay upon and press the *Intestinum rectum* and cause an extraordinary weight, because these parts are only appointed by nature to bear the burden of liquid things which are less ponderous than the Stone. When they have Asperities, or are covered with a coat, they are detained in the wrinkles of the Bladder: Now if they be very light,

light, and without adherence, they float a  
 long time in the water; but because of the  
 weight they have they descend towards  
 the *Urethra*, and the smaller they are, the  
 bigger or the less unequal in their Sur-  
 face, the more they close the passage  
 because the small Stones slide easily in  
 the *Urethra*, and the Urine may run  
 down between the Asperities of the  
 Stone. That Obstruction hinders the  
 passage of the Urine and obliges the Pa-  
 tients to lye upon their backs; they hasten  
 by and with violence turn themselves, to  
 make the Stone change its situation, that  
 so they may facilitate the excretion of the  
 Urine; and because pain makes the Spi-  
 rits move towards the neighbouring  
 parts, these are so distended that Men  
 and young Boys are fain to draw out the  
 Yard and Prepuce to appease the pain  
 and therefore they cross their Legs, and  
 press their Thighs together: Moreover  
 the Stone change its place a little close  
 Urine, or mingled with slime comes out  
 According to the same principles it may  
 stop the passage, which obliges those that  
 are subject to the Stone to have often  
 desire

desire to make water. They are commonly dry, because the Spirits and Humors are dissipated and spent by labour, pain and watching.

By these observations we may judge that there are several *Diagnostick* signs which are equivocal, as the Yard and Prepuce drawn out by the hands of the Patient tormented with Inflammation, pain, and voiding of Purulent matter, by sharpness of Urine and gravel; because Sandy matter or little Stones having caused their symptoms, may be evacuated with the Urine; nevertheless when that hath a sediment mingled with Sand and thick Slime, when there is any smell of a Stone within, or squeezed out of the Yard, it is a pregnant presumption, which commonly serves for a certain sign.

The univocal *Diagnostick* signs may be drawn from the same observations; as a sudden and fixed pain in the loins towards the one or the other side, and sometime towards both in the region of the Kidneys; after which the Urine looks reddish and Sandy, or sometimes  
Crude,

Crude, Clear and Watry, a numbness  
 the Thigh on that side where the pain  
 when the Stone is bigg : There is a  
 ting and restless Itching towards the  
*Pubis* and in the end of the Yard, accom-  
 panied with a frequent and sudden  
 pression of Urine, a pain and heaviness  
 in the *Perinæum* with a continual heat  
 Urine, and immediately after the making  
 of water a fresh desire to do it again.  
 may be observed why there are such va-  
 lent strainings for a stool, and why  
 Urine stops all of a sudden when one  
 standing, which happens not in another  
 posture.

One of the surest of all the *Diagnostick*  
 signs is the thrusting of the finger in  
 the *Rectum* of Men. The Chirurgi-  
 will feel a hard body betwixt his finger  
 and the *Pubis*, or a little higher. If the  
 finger be not long enough, they make use  
 a hollow Probe called a Catheter, which  
 is introduced through the *Urethra* into  
 the Bladder; And then is felt something  
 that is hard making a dry sound and  
 noise as if one touched a Stone; this  
 the most certain of all *Diagnostick* signs



It is very necessary to make an Experiment of this in dead Bodies, by opening the Bladder, and putting Stones therein; and then having stitched up the Parts, to introduce the *Catheter* by the Yard.

The *Catheters* that are made use of, to know if Women have the Stone, are of another Figure; they shall be represented with those of the other Instruments,

When the Stone is skinned over by a peculiar *Membrane*, or when it is formed betwixt the *Membranes* of the Bladder, or that there be an old excrescencie of flesh, called a *Sarcoma*, (which are rare Distempers) or if there be a fungous Body, it is not easy to discern it, because the Symptoms of these Diseases in those Parts are much alike; but the Stone is much more frequent there, and one is not often mistaken, provided he be attentive in sounding or searching.

What we have said of the external Causes of the Shapes and Figures, serves us for Signs to foretell the plurality of Stones on which we see the marks of Collision, when during the time of the

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Cure,

Cure, a Stone is taken out which was not left in the Bladder, it is said that Patient hath a Quarry of Stones.

The figure and bigness of the Stone being considered after the Operation, one may judge whither or no the consequences will be dangerous, for if it be monstrous, the parts have been much dilated and contused, and if it be craggy and pointed, there hath been dilaceration or adherence, and some times complication, the Stones that have many asperities are never so big as those that are even and smooth in their surface, and that for two reasons; the first is, because the minute Bodies that compose those rough Stones, are not so closely comparted, and some of them may break off and be voided with the Urine; the second, because those asperities cause a more sudden and more pungent pain than other Figures, and may force the Patient to betake himself more speedily to the Chirurgion for ease, who performs the operation, before that it hath had time to encrease to a greater bigness.

## C H A P. VIII.

*What is to be observed by the Chirurgeon  
before the Operation.*

**H**Ipocrates having taken an Oath never to undertake the cutting of the Stone; hath instructed us how necessary it is to observe all circumspection in performing it. Wherefore when a Chirurgeon pretends to the cutting of the Stone, he ought to frame to himself a Notion or Idea of opening to himself a passage to the Bladder through a convenient place for extracting of the Stone; by his Rules and Precepts he will know if he can Operate, and then he is to resolve upon it. He that is troubled with the Stone, is his Subject in matter, and it is the duty of a skilful Chirurgeon to foresee the consequences, to the end he may guard himself with necessary remedies against the accidents of the matter, and of the Operation.

A Chirurgeon that is called to search or cut a Patient, ought to make him-  
D 2 self

self be distinguished from Quacks ; that will be easie for him to doe, if he observe what is taught in the Principles of Chirurgery, where they treat of the Qualities of the Chirurgeon and of the Servants.

It is one of his chiefest qualities, that he have great skill in Anatomy, that he may know the formation and scituation of the Parts, that so he may Operate with necessary circumspection, be not bold but yet not rash : he ought not to make his prudence appear, by making his prognostick, and distinguishing between those things that are infelicitous and perilous, and those things wherein according to the Rules of the Art he may succeed, without exaggerating the least circumstances and events that depend not upon him, by an unnecessary flood of words.

He is to consider the State, Strength, and Age of the Patient ; for knowing that a Man is upon the brink of death, before that he search or probe him, he is to acquaint those that are by, that it is no disgrace to him if he cannot search him, or if though the *Catheter* be introduced

introduced into his Bladder if he make out little or no Water, by reason of his weakness ; because a Patient falls sometimes into an apparent suppression when he hath no Urine to render : this happened to me about 3 Years ago. I was sent for to search Mr. *Sartarin* an advocate, he was very Ancient, Hydropical, and at the very point of Death, and had not made Water for three days : I did not search him, and he died within an hour after I saw him : when he was open'd there was not one drop of Water found in his Bladder ; his Ureters were so closed up that the Urine would not pass.

The Chirurgion ought to be Informed from the Patients own mouth, and by those that wait on him, of the secret matters and distempers to which he is subject ; of the excesses that may have contributed to his Indisposition, nothing is to be concealed from him because of the Remedies and Instruments which he is to choose.

*Hypocrates* in the sixth Aphorism of his sixth Book affirms that old Men are



hardly cured of the Diseases of the Kidneys and Bladder ; and elsewhere assures us that he never saw any fifty years of Age Cured ; according to *Cælius Aurelianus*, their Bladder is Nervous, and they have but little natural heat ; besides it is seated high, so that Medicines cannot be conveyed to it. They are weak and many Excrements fall continually that way. Nevertheless several have been cut and cured of the Stone at a greater Age.

It is a good presage for the Cure, after the operation is performed, if the Patient sleep, if his respiration is equal, his tongue moist, and if he be not sick nor do vomit ; the lower region of the belly little or not at all swelled, with moderate pain and a slight Fever ; the cause in that disposition, (according to *Celsus*) the inflammation ceases commonly about the fifth or seventh day.

He ought to know that the Patient often dies by the accidents that accompany or follow the Operation, the

by the Stones whilst they are in the Bladder.

If the Patient be too weak, he ought to have time to gather strength, otherwise the Operation would reduce him to evident danger, and the Chirurgion ought to give notice of it, that he may avoid the blame: before the Operation some time is to be allowed for the digestion of the food that the Patient hath taken, that so his Body may be in better plight to endure it.

*Celsus* observes that most of learned men have a weak stomach, and that they are not strong by reason of Watchings and over Studying.

The Medicines of *Pharmacie* cannot cure the Stone; they only bring relief when the Stones are very small in the Kidneys or Bladder, and when they are as yet but a kind of matter easy to be resolved into Powder, and to be evacuated with the Urine. The Chirurgion ought to make his prognostick, examining, if he can, the bigness of the Stone, with his finger thrust into the Fundament; informing himself,

how long the Patient has complained of it, observing the season, place, and other circumstances directed by the Principles of Chirurgerie.

Those that have the Jaundice, Dropſie, are not ſtrong enough to endure the Operation.

When one hath diſcovered the ſigns of the Stone or Gravel, if the Urine after it hath been bloody, or becomes of purulent matter, it is a ſign that there is an Ulcer in the Kidneys or Bladder, cauſed by the roughneſs and aſperities of the Stone, and that there is no hope of curing an Ulcer in the Kidneys, cauſe hot and penetrating Medicines are required for expulſion of the Stones, and the contrary for Ulcers : nature ſometimes ſtirs up or aſſiſted by divers Medicines, diſcharges it ſelf of that load and gives opportunity of eaſing the Patients of their tormenting pains.

The Chirurgion ought not to expect a Cure, if after the Patient has been cured of the Nephritick Colick, continue long with pains that are ſometimes heavy and dull, and ſometimes acute and ſharp;

cause that is a Sign that there is a big Stone, or many little ones, which still remain and take growth in the Kidneys.

A Patient labouring under a suppression of Urine, cannot be cured after the third day, if he be taken with a drowsie fit, and if he can hardly fetch breath. The Hicket is a mortal symptom.

The Gout happening to those who are troubled with the Stone, may sometimes cure them; the contrary also, through the abundance of humors does also happen.

When the Stone is Adherent, or covered with a Coat, or if we meet with a fungous or sarcomatick Body, the separation of them is gradually to be attempted by injection and moderately deterfivive Medicines.

Children are sooner and more easily cured by this Operation, because they have a more sedate Mind, and less troubled with Passions, being nearer the source of Life, than those that are stricken in Age.

Whilst all things are preparing, it is the Chirurgions part to comfort the Patient,

tient, ordering likewise that he have  
ritual and Ghostly helps Administred  
to him.

## C H A P. IX.

### *Of the Method of Searching.*

**W**OMEN are least troubled with  
the Stone, because their *Vagina*  
*thra* is shorter, wider, and more direct  
and therefore is not so obnoxious to Dis-  
eases as that of a Man: But seeing  
sorts of Persons are subject to the Stone  
having first inquired into the Signs, the  
Patient is to be put in a convenient po-  
sture to be searched, that so the cause  
of their Pains may be discovered. If  
be a Woman, she is to be laid upon her  
Back, her Buttocks a little raised, and  
having chosen a *Catheter*, bending one  
at the end, and anointed with Salade  
Oyl, or some other sweet Oyl, she is to  
be made to open her Thighs a little.  
Then the Operator is to open and sepa-  
rate the *Nymphæ*, with two Fingers of the

same



same Hand, that the Orifice of the *Urethra* may appear beneath the *Clitoris*; afterward the *Catheter* is to be thrust gently with the other Hand, and so a search to be made whether there be any Stone or not.

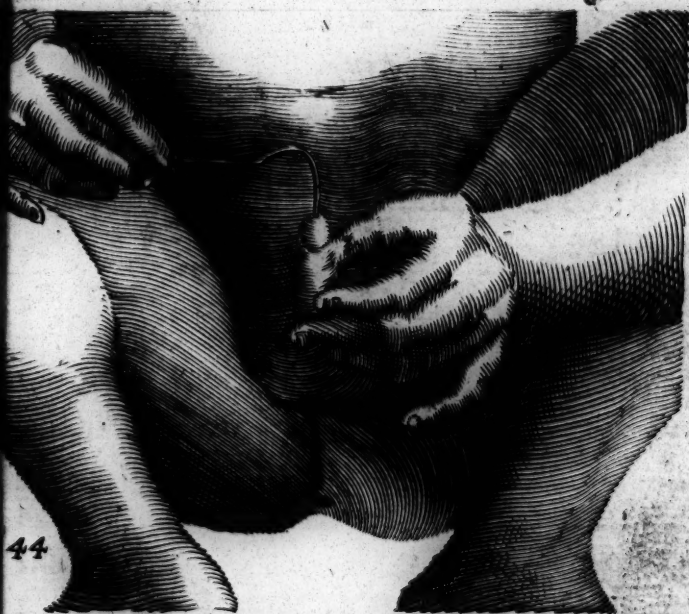
It is no great matter whether the bended part of the *Catheter* be turned towards the *Pubis*, or the *Vagina*, because of the conformation of the *Urethra*, and it is convenient not to be just opposite to the hollow of the *Catheter*; for fear of the Eruption of Urine.

For the more easie searching of Men, they ought to lean a little back, or to be laid upon their Backs; and the Chirurgion having made them open their Thighs, he is to raise the Yard, and hold it streight betwixt the Thumb, and the fore and middle Fingers of the same Hand, Skinning and taking the Prepuce off of the *Glans*, afterward with the other Hand he shall gently thrust an oyled *Catheter* to the very bottom of the *Urethra*, holding it by the end where the rings are, like a Pen betwixt his Fingers, with this difference, that the rings

rings of the *Catheter* are to be hid with the same Fingers, his Hand being hal open, turned toward the *Pubis*, and the bending or bill of the *Catheter* toward the *Anus*; then must the *Catheter* and Yard be moved towards the Groyn that is remotest from him that searches, and in the mean time he is to turn betwix his Fingers the *Catheter*, and the bill of it towards the *Pubis*. Observe that the fore and middle Fingers touch the *Catheter* on the one side, and the Thumb on the other, answering exactly to the space betwixt the Fingers; at the same time the Chirurgion is to press a little more with the fore Finger, which is higher than the middle Finger, so that the Center of the motion be upon the Thumb, by that means the handle of the *Catheter* is covered, and the bill or bending of the *Catheter* raised, that it may press the *Sphincter*, and enter into the Bladder; this is the Figure of it.

Whilst the Chirurgion is turning the bill of the *Catheter* towards the *Pubis*, he is to pull the Yard a little up, that the *Urethra* may be extended and free from

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from wrinckles ; because it being a *Membranous* Part, the Plicatures thereof may hinder the *Catheter* from slipping down.

Sometimes, when the *Catheter* is introduced to the very bottom of the *Urethra*, and when the bill of it is turned towards the *Pubis*, the Chirurgion is obliged to let go the *Yard*, and to put a Finger into the *Anus*, and by a light compression of the *Vectum*, and the *Urethra*, the *Catheter* is conducted into the Bladder; which being done, he is to draw out his Finger, and hold the *Yard* no longer.

The *Wire* or *Stilet* is taken out of the *Catheter* before it be introduced, and when it is in the Bladder, it is held by the rings betwixt the fore and middle Fingers, having the Thumb upon the hollow of the *Catheter*, and the back of the Hand turned towards the Patients Belly: then the Chirurgion is to give some easie Jogs, moving the bill a little to the right and left, without turning the *Catheter* fully round. The rings are lowred, that the bending may mount towards the bottom of the Bladder, and  
some-



sometimes they are inclined near the  
 Belly, without forcing the *Catheter* out  
 of the *Sphincter*, and by these kinds of  
 motion, if one be very attentive, when  
 it is a Stone, one shall hear a little sound  
 as of two small Stones that touch one  
 another, or at least something is to be  
 felt that makes a collision with the  
*Catheter*, as if it were rubbed with a Stone  
 if it float, it may be felt when there is  
 Urine in the Bladder; And that requires  
 that the Operator should stop the hollow  
 of the *Catheter* with his Thumb; but if  
 nothing be felt, the Urine is to be let out  
 by the *Catheter*, and then diligent search  
 to be made.

There is another way of searching  
 Men; the Yard is to be raised and moder-  
 ately pulled up, laid upon the Groin  
 and the rings of the *Catheter* inclined  
 towards the Belly; so that the bill  
 turned towards the *Arms*.

There are Ungosities in the Bladder  
 that sometimes deceives him that search-  
 es; but they may be discerned, because  
 then, one finds only something that is  
 soft or but moderately hard, which makes

the noise by the touch of the *Catheter*,  
 of Bladders of Children have no Ungu-  
 es like to those of Men.

In the Hospital of the *Charity* at *Paris*,  
 at the beginning of a cutting in the  
 year, 1681. Two Children were presen-  
 ted to be cut; but the Stone not being  
 cut, they were put to Bed again; not-  
 withstanding, after many others had  
 been cut, they were examined the se-  
 cond time, the Stones discovered, and  
 immediately cut out, because they were  
 prepared. This makes it appear that one  
 should not be too hasty to give his *Opi-*  
*um*, if sometimes the Stones are not  
 cut though the Signs seem evident, be-  
 cause they may be small or change their  
 place. At the same time a Man was  
 searched with a *Catheter*, used to make  
 patients void Urine: After that the bill  
 had been inclined to the right side, and  
 several times thrust towards the bottom  
 of the Bladder, the rings were pressed  
 down towards the Belly, as if there had  
 been a design to bring out the *Catheter*;  
 but when the bill of it was judged to be  
 near the *Sphincter* of the Bladder, it was  
 turned

turned to the left side, which could not have been done sooner, because of the length of the bending of that *Catheter* and the smallness of the Bladder ; the Operator continued to search the Stone which not being felt, was found with another *Catheter*, whose bill from the beginning of the bending, was not so long, and therefore that *Catheter* turned easily in the Bladder.

This observation instructs us what *Catheters* are to be chosen for voiding Urine, whose bill ought not to be so long as those that serve for making the incision, and which are Channelled or Furrowed. There are some Men who have very narrow *Urethra's*, which require small *Catheters* like those for Children, and of a sufficient length. *Catheters* that do not easily bend or bow, are likewise to be chosen ; and that depends on the Work of the Artist that makes them.

When the Stone is in the Neck of the Bladder, it is not necessary that the *Catheter* should be introduced so far as the bottom of it, because the Stone may be

felt, provided the *Catheter* be onely introduced as far as the bottom of the *Urethra*.

When there is a *Carnosity*, which hinders the *Catheter* to slide into the *Bladder*, the Operator must put a finger into the *rectum*, and if there be a *Stone* he will find a hard and ponderous Body towards the *Pubis*, if there be a great inflammation, it is the opinion of *Fernelius*, that no search should be made; in that case one should observe to search gently and seldome, because otherways it may be the cause of pain, inflammation, excoriation, a gangreuous Ulcer in the *Sphincter*, nay and even a Supression of Urine, or a peircing of the *Urethra*.

Besides these Diseases, one cannot sometimes search because of a *Phymosis*, and of a *Stone* in the *Urethra*; something must be said as to that, as much as is necessary to be known upon the account of *Lithotomy*.

## C H A P. X.

Of a Phymosis, and of the Stone in the Urethra.

**M**Any Children have a *Phymosis*; to search them, we must hold the Yard betwixt the little finger and ring finger, the back of the hand being towards the Belly, and with the other fingers pull back the *Prepuce*, as if intended to skin the *Glans*, the thumb on one side, and the fore-finger and middle-finger on the other, gently pressing with these three fingers towards that part of the Nut or *Balanus*, where I judge the end of the *Glans* to be seated; that by that means the Orifice of the *Urethra* may be the more dilated; then the *Catheter* is to be introduced gently searching for the perforation of the *Glans*; one may know that he is in the *Urethra*, if the *Catheter* enter easily, and by feeling with the fingers of the other hand along the *Urethra* on the under side of the Yard.



If the *Prepuce* be so strait that the *Catheter* cannot be introduced, or if one cannot hit upon the Orifice of the *Urethra*, there is no danger, to dilate a little the *Prepuce* sideways, with the point of a common *Bisturi* or a pair of sharp *Cissars*.

Observe that before the introducing of the *Catheter*, it will be fit to squeeze the *Yard* with the fingers along the *Urethra*, and so to try if one do not feel some hard Body which stops the passage, as *Carnosities* or *Stones*. When it is a *Stone* the *Catheter* is to be drawn out; and if before searching it was known to be a *Stone*, and that it stuck in the middle of the *Yard* between the *Glans* and the *Testicles*, there is no searching, but having onely pressed the *Yard* with the fingers from the *Pubis* to the *Stone*, the Operator shall take a *Curette* or *Extractor* oyled, and having introduced it by little and little, and passed it beyond the *Stone*, he may therewith draw it out of the *Urethra*.

The *Curette* or *Extractor* is like an ear-picker, made of Steele, because it is less

apt to bend than if it were made of another Metal, the Operator must have of them of several sizes in bigness, four or five inches long ; the figure of it you may see in the lower end of the second plate of Instruments.

The extremity of the *Urethra* may be dilated in the upper part of the *Gland* when stones are extracted with the *Curette*, and when being brought as far as the Orifice, they cannot pass without pain.

The Urine serves for a Remedy ; and if there hath been a Contusion and Pain it is enough to foment the Yard with the oyl of Roses, and cover the Nut or *Balan* with a little pledget dipped in the liquor of *Arceus*, dissolved with a little *rasatum* moderately expressed out with the *Nucial* or Cross bandage open in the middle, and the band with three heads to wrap it up in, and it is not to be forgot, if there be need for it, to put a girdle about the Child, to which the band may be tied, nay and a Collar hanging about the neck like a Chambermans Strap, the lower part of which is to be fastned to the girdles that it may

not sink lower than one would have it.

That Bandage serves for other Distempers of the Yard, beginning to apply it upon the *Glans*, and then bringing it nearer to the Belly, with slight couplings and circumvolutions to keep the Medicine fast to the part, and near to the *Pubis* an indifferent hard knot is to be cast, then the two heads at the other extremitie of the Band or Truss are to be tied to the girdle.

The precise length and breadth of all the parts of that bandage cannot be determined, because it depends upon the Judgment of the Chirurgeon to make them so long and so narrow as that they be not Cumbersome.

There is still another way of extracting the Stone out of the Yard, when it is at a distance from the Sphincter of the Bladder. And that is this; having drawn back the skin of the *Præpuce* as much as one can towards the Nut of the Yard, a Ligature is made betwixt the Stone and the *Pubis*; or otherways one may with the fingers compress the Yard and the Skin be fore and behind the place where

the Stone is observed to stick, and after ward make Incision upon the Stone little side-ways in the *Urethra*, that the Stone may be taken out by means of the *Curette* or *Extractor*, introduced into the Orifice of the Incision, the Ligature being removed and the Skin loosened, the Incision stops and is cured by the Balsom of the Urine; without other Medicine.

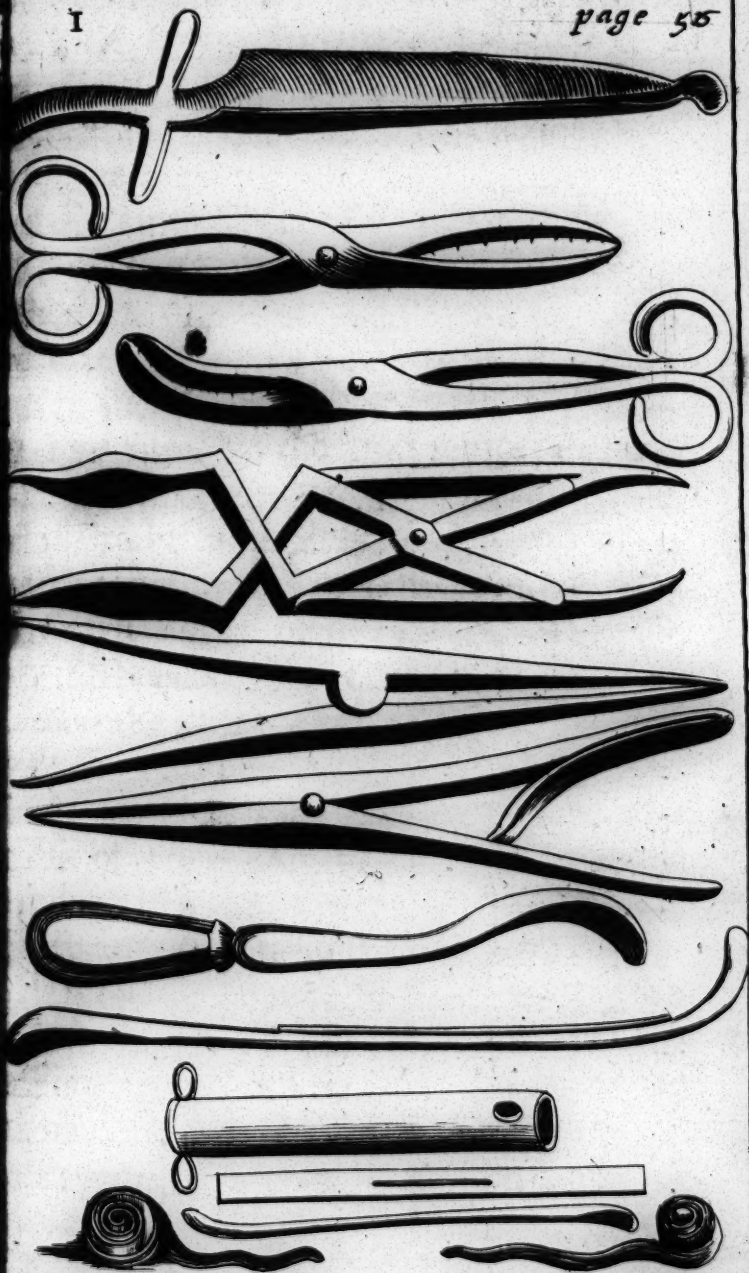
If one be unwilling to make Incision in the *Urethra*, or if the Stone cannot be got out with the *Extractor*, it will be fit to give *Diuretick* Medicines to force it forwards to the *Glaus* thereby facilitate its Extraction.

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## C H A P. XI.

*Of the time of Searching and Cutting; the Instruments; of the patients Diet and of the first Preparation.*

A Patient may at any time be searched or probed to make him render his Water, and to discover the Disease





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If one find himself extreamly troubled with the Stone, cutting is not to be delayed without danger; but since some diseases requires a speedy Operation, we shall not speak of the time which is called the time of necessity; but onely of that of Election, which is laid hold of, when the distemper is in such a Condition as to give opportunity to do things in order and without precipitation.

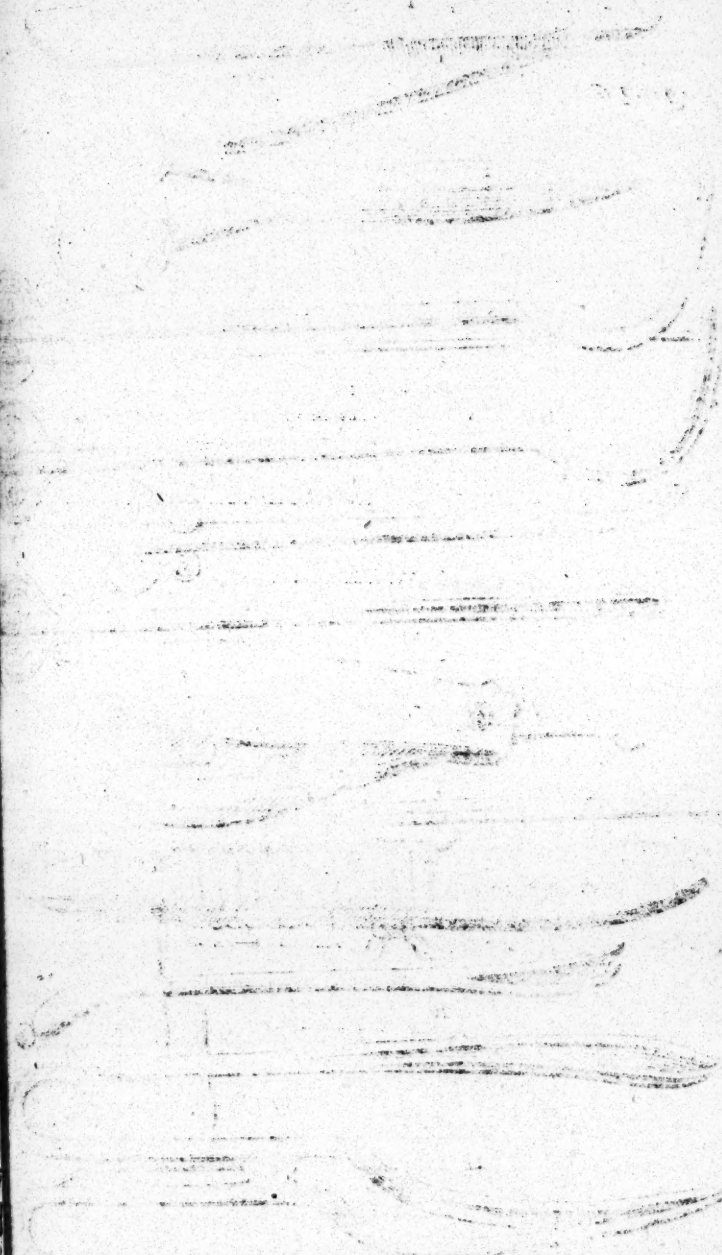
The Spring is the most temperate season of the Year, wherein *Vitriol* the father of all Productions, gives verdure to Plants, and contributes to the vigour and strength which men find renewing in themselves at that time, then do men undertake what was interrupted by the excessive cold or heat of other seasons, that in the *Autumne* they may enjoy the fruit of their past labours. With great reason then men choose the Spring time for many Operations, and amongst others for *Lithotomy*. In this Country we must expect till the impression of the Winter cold, and the frequent Rains be over. Though the Spring begins on the eleventh of *March*, nevertheless accord-

ing to the temper of the Air, the Operation of the Stone is accelerated or retarded; but commonly it is performed in the Month of *May*, Next to the Spring the *Autumne* is to be preferred before the other seasons.

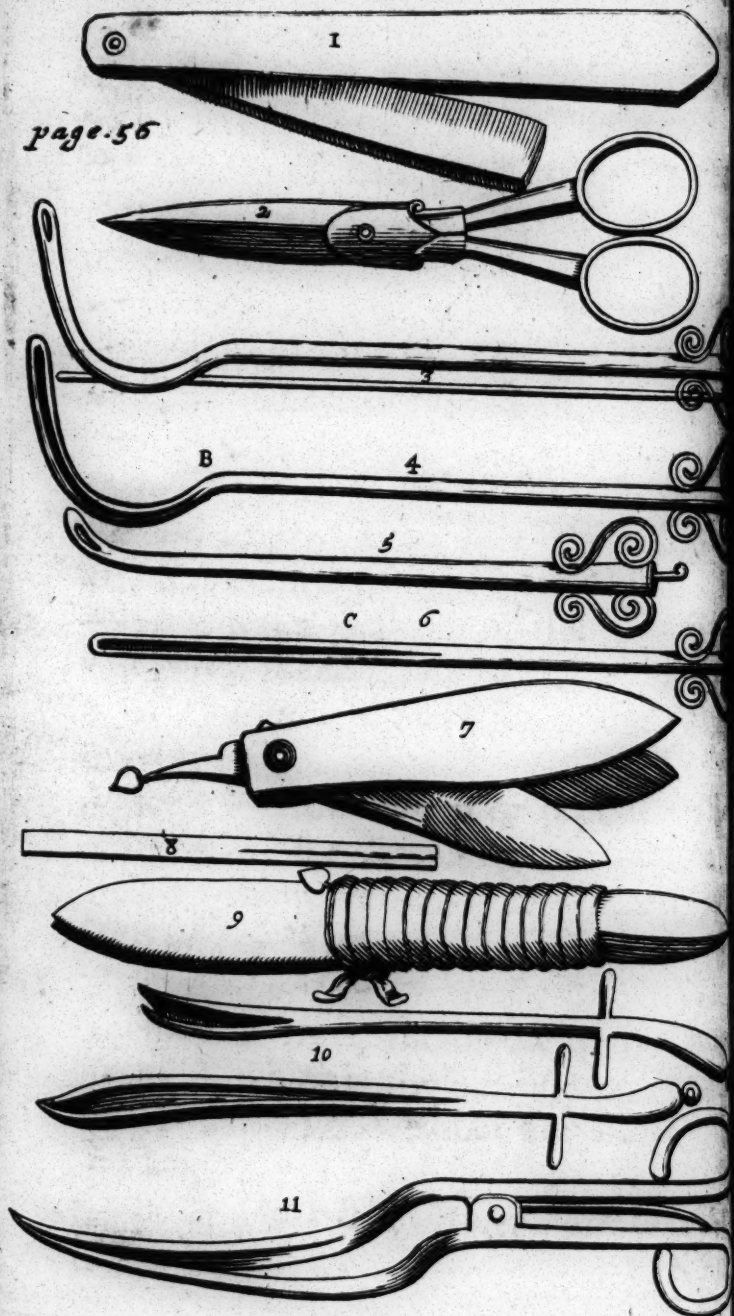
Though Liquors and *Menstruums* for dissolving of Stones were in use, yet must we of necessity speak of the Remedies of Chirurgery, which are Instruments of Iron or other Metalls proper for *Lithotomy*. Take here their figures and the names of their parts.

1. A Razor to shave off the hair from the privy parts.
2. Common Cizars for ordinary Incisions.
3. A Hollow sound or probe, called a *Catheter*, for searching of men, and making them render their Water, and its *Stilet* or Wire to cleanse it.
4. A *Catheter* or *Staffe* for making Incision in men, furrowed in the back from A. which is the bill or *bec*, to the place marked B. without any cavity in its length.
5. A Hollow *Catheter* and onely crooked

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crooked at the bill for searching of Women, and its Wire for cleansing it.

6. A Streight *Catheter* or *Staffe* and hollowed or furrowed from the bill to the place marked C. which is sometimes made use of for making Incision at the Orifice of the *Urethra* of Women. It is requisite to have always in the *Catheter* case a part, a little piece of a Sponge moderately moistened with Salad-Oyle, because sometimes it may be wanting when there is need of it to anoint the *Catheters*.

7. A *Bistori* that opens like a Lancet with a point and edge like the same one-ly the point blunter, at the head whereof there is a flat taylor to keep it firm against the handle when it is opened,

8. A *Languette* or roller to mount the *Bistori*, it is slit at the end, a finger broad, and a foot and half long.

9. A *Bistori* mounted, that is to say, armed with the *Languette* or Roller.

10. Conductors or Probes, whereof a pair serves for the Operation, that which is next to the *Bistori* mounted is forked, and the other has a line in the length

length of its cavity, for guiding and conducting the former. Nevertheless that alone which is remotest from the *Bistouri* may be used for conducting the forceps or *tenette*.

II. Another kind of Conductor composed of the two above described; it turns with an elbow about the middle and has a Spring betwixt the branches near the rings; it was invented by *Joseph Covellart*.

1. Another kind of Conductor called in French a *Gorgeret* more common and more in use. It is hollow, tapers and grows narrower at the end where there is a bill that is introduced into the furrowing of the *Catheter*, while it is held by the other end shaped like a T. There are some who do not approve of this Conductor, saying that it dilates the parts too much, and that it occasions *Fistula's*, but without ground for it is narrower than the forceps which is drawn out with the Stone and possesses more room, and the *Fistula* is only occasioned by the consequences of the Operation, as shall be explained in its proper Place.

2. Streight

2. Sreight and crooked *Forcipes* or *Tenettes*. A. their Teeth, B. their Branches, C. their Rings.

3. A *Dilatatory* for Men. It is named a Compound or great *Dilatatory*. D. the bill or *bec* of the *Dilatatory*. E. the handle.

4. A simple *Dilatatory* for Women. The extremities of it are blunt, and very small, the Branches are joyned in such a manner that closing the one end, the other opens. It represents the letter X.

5. Another *Dilatatory* that may serve for Women and little Boys. It hath a spring near the handle, and can dilate but moderatly. It may be used when one fears that some *Fibres* have been left in time of the Incision.

6. A Hook or *Crochet* to pull out the Stones that are in the Passage, either in the lesser Operation or otherways, some cause them to be made with little Teeth in the cavity of its bending; but there is no necessity for it.

7. A Button, a Scoope. About ten Inches long, and as big as a quill. F. the part properly called the Button. G. the body

body of the Button, H. the other end which is hollow, called the *Curette* or Scoop of the Button. I. a slight line to conduct the Forceps.

8. A hollow Tent, Pipe or *Canule* having rings at one end called the Head the other end is called the Point, where there are two holes called the eyes of the Tent.

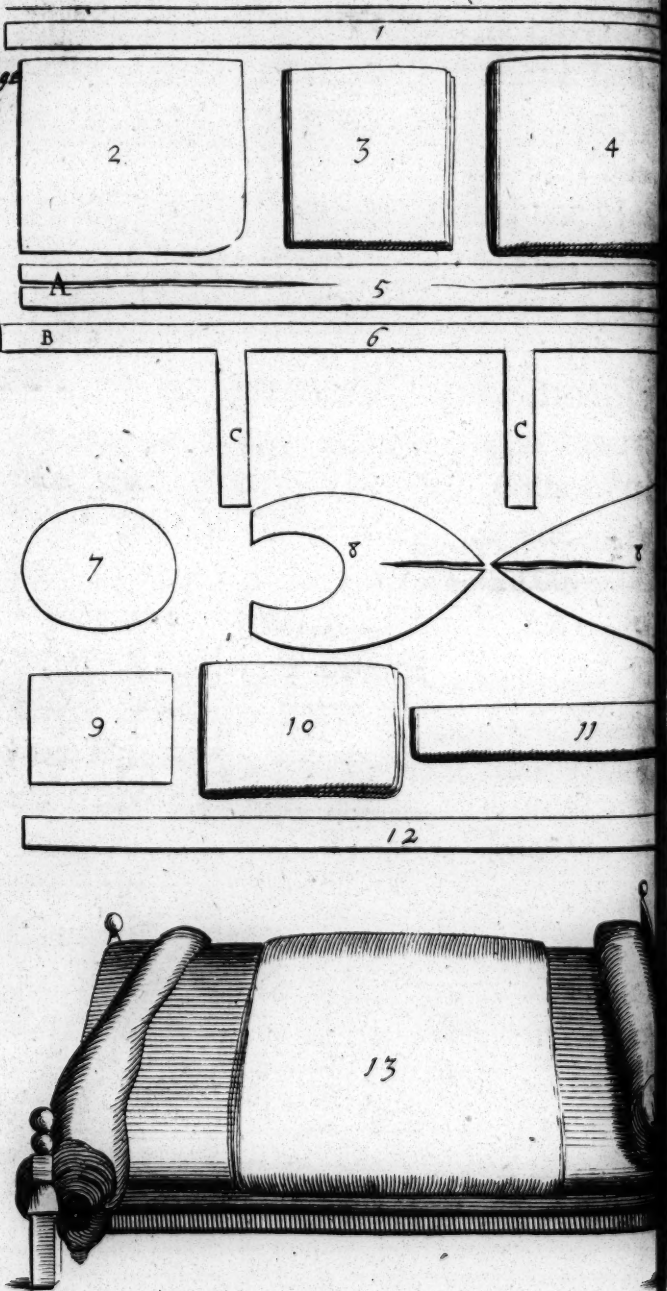
9. A *Languette* or Fillet for mounting the hollow Tent, introducing it into the Slit, and putting the two ends of the Fillet through the rings of the Tent then it is called a Tent mounted. The Fillet or *Languette* is to be two fingers long, and a finger broad.

10. Two Ligatures by the French called Scarfs for persons grown up, they are made of silk and wooll mixed together, each of them is four or five ells long, and four or five fingers broad. If the Chirurgeon want Ligatures or Scarfs; when he is making his Preparation, he may cut bands of strong linnen cloath, and make use of them. There is nothing lost in that, for he may afterward cut them to serve for a Truss or

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*Eroude*, and for dressing the Patient.

II. An Extractor or *Curette* for extracting Stones out of the Yard.

I. A Chair used in the Hospital of the Charity at *Paris*, on which the Patient is set, for the more commodious performing of the Operation. There are behind two bars or rods of Iron in form of Butresses; they are hooked, that so they may enter into the rings of the Chair, and sharp at the end to stick firmer in the Floor, because the Patient struggles and uses violence in the time of the Operation. The Chair should be placed a little obliquely for the light to come upon the right hand of the Chirurgeon, that he may see the better when he is about his Operation.

Instead of that Chair, the Patient may be seated upon the side of a Bed, or on a Table, with a Mattress or Quilt, whereof one part covers the back of a common Chair reversed, about half a foot distant from the edge of a Table, in a sloping manner. That Chair is to be made fast with many strong cords, if there be no Mattresses or Quilt, it will be

be sufficient to lay a Pillow or any other thing to make the place soft, and a folded Sheet over it.

2. A Sheet folded length-ways with many folds, to cover the Chair hath been described, or the Matter of the time of Operation: one part of it is before, and the rest hangs behind.

3. A Budget to put in separately, with Freight Forcipes in the one side, and crooked, with the hook in the other, to the bottom the *Dilatatory*, the *Butt* and the *Conductor* are hid. It may shut, lifting up the sides of it where there are Button-holes, into which put the Buttons that are fastened to places marked C. D. near the strings.

A Table whereon the Porringer with Oyl is set, and the mounted Bistour laid, under which a peice of linnen-cloth folded with many plaits, is put three ways, that their points may not touch any thing. It is fit that several Bistours should be mounted, though there be but one Operation to be made, because the edge or the point are sometimes blunted, and it is necessary to have some

bags of linnen-cloath and napkins in readiness.

All the Instruments may be made of Steel or Iron, nevertheless the Catheters, Conductors, Button and Tents, are nearest when they are of Silver, and less subject to rust. Of each kind there ought to be several sizes, and those well polished. It is not enough to have spoken of the Instruments of Chirurgie, we must likewise, according to the Rules of good method, take into consideration, what things are necessary before, in the time, and after the Operation. Before the Operation the Patient ought to be prepared for some days by a Diet, Blood-letting, Glysters, Purges, reiterated more or less, according to the advice of a skillful Physician; and the night before the Operation, the Patient must take a laxative, or else an astringent Glyster, according as need shall require. He must have a days time at least to rest in after he hath taken Physick: and spiritual Remedies are not to be omitted. At the time of cutting, the Operator must

must choose four faithful servants at lea  
 a Chamber indifferently warm, and  
 good Air where the light of day m  
 suffice. He must have an Apron  
 Sleeves, and under the Table a tub  
 warm water to wash the Instrumen  
 upon the Table there must be Salad  
 or oyl of Roses, and there he is to  
 his Instruments in order for the Op  
 tion : all these things are called the  
 paratives. (*Appareil*) for the Operat  
 the Bandage and Medicines that  
 made use of to dress the Patient th  
 cut, are called the preparatives for  
 dressing, which ought to be in readi  
 because they are used immediatly  
 the Operation.

The Medicines, both Powders  
 Oyntments ought to be astring  
 warm, *Oxycrat* and *Oxyrodinum*.

The Bandages as well for Men  
 Women. are

1. The Ligature, or *Colier*, which  
 a great band for Blood-letting, when  
 two ends of it are tied together, it is  
 an oval Figure, which is put over  
 Head, and comes down as far as the



1. This band may be put about the Patient before the Operation.
2. A Bolster or comprefs of a moderate thickness, three or four fingers broad, to put upon the wound when the Operation is done, and when the Patient is to be carried to bed ; it ought to be laid upon the Table, with the Bistories and the *Catheters*.
3. An astringent Plaster of a sufficient bigness to cover the Belly.
4. A *Ventriere* or Belly-clout, which is a great Bolster or Comprefs to cover the Belly, it is to be dipped in warm *Oxyerat*.
5. The *Froude* or Bandage or Trusse with four Heads, A. the Heads which may be called Twins, because they begin in the same place, and are destined for one and the same use.
6. The Truss or double T. or second Trusse, B. B. the girdle of the Truss, C. C. the Tails or Straps of the Truss.
7. A Pledget *Plumacean* covered with Astringent.
8. Astringent-Plasters of several sizes.
9. A Plaster longer than broad, to

be put some days after the Operation upon the Pledget instead of the former Plasters, this Plaster ought to be somewhat longer than the Wound.

10. A small square Bolster or Compress indifferently thick, and somewhat larger than the Plaster above described.

11. Another double compress as broad and a Foot long for Males, call a Truss. These two Bolsters are to be moistened in warm *Oxyerat*.

12. A Ligature or *Farettiere*, which is a long band to be Swathed about the Thighs, that the Patient may keep them within a moderate nearness to one another.

13. A Bed covered with a Rowling Sheet, or a Sheet doubled into many folds and laid cross the Bed, in the place where the Kidneys and Thighs of him that is to do Rest. There is need of several Sheets or *Alaises* to shift and make it dry when it is wet, it is to be warmed with a Warming-Pan; if it be needful, it is requisite also to have a good many Napkins in Readiness to put under the Patient, when he hath a Looseness that

may be the sooner laid dry, and sometimes besides that Sheet a Sere-Cloath or thin Blanket is put betwixt the Sheets & the Quilt to preserve it from spoiling and rotting by the Urines; but a Sere-Cloath makes the Bed too hard, and is not good but when there is a want of Sheets or a Quilt to shift the Patient. It is not to be forgot that a cord must be fastned to the top of the Bed or some other place to help the Patient to raise himself.

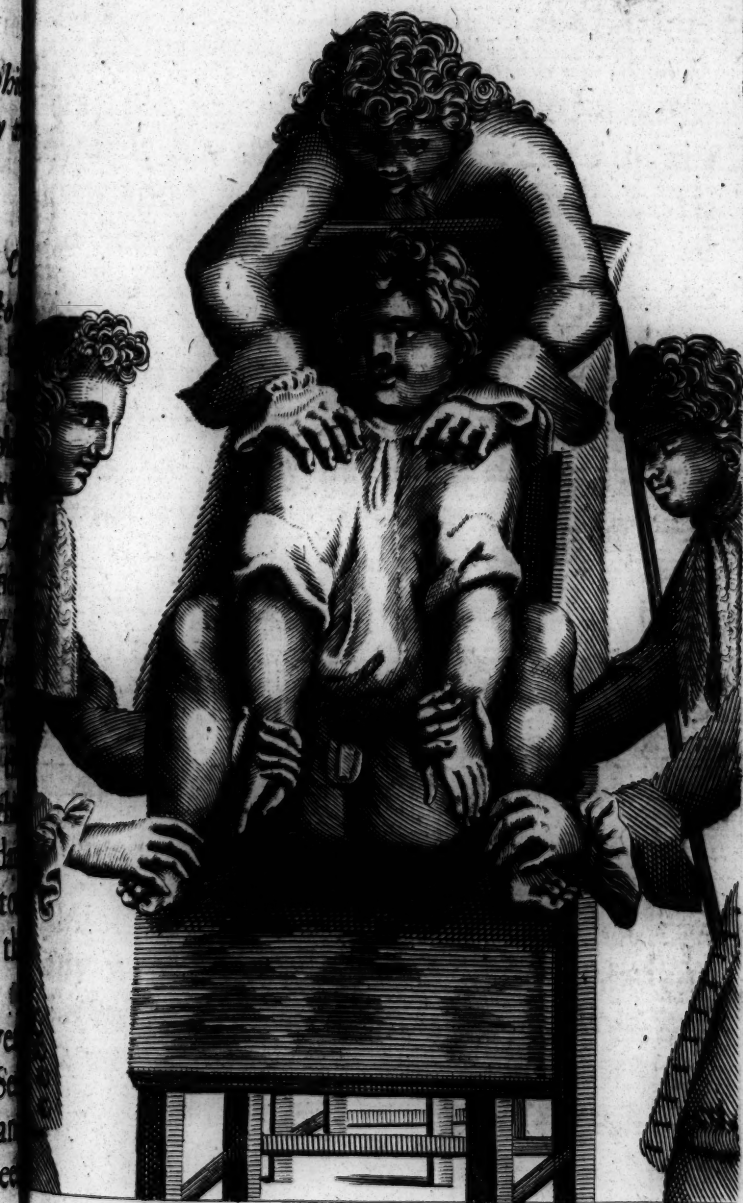
There are some Operators that hide their Instruments in their pockets, or put the *Catheters* in their Button-Holes before they anoint them with Oyle; others lay them in a Dish, nevertheless seeing it makes a noise when the Operator takes them up to Operate with, it seemes more commodious to have them in a Pouch or Budget.

## C H A P. XII.

*Of the Posture and Scituation into which Children are to be put ; when they are to be Cut.*

**A**LL things being prepared, the Catheters put into Oyle, the Bistoury and Tents mounted, and laid upon a Table, the Tub with warm water underneath it, the streight and crooked Forcipes with the hook placed in order in the fore part of the Budget, a Conductor, the Button and Scoop, and Dilatatory, if it be thought necessary, the bottom of the Pouch or Budget the Patient is sent for, brought to the place of Operation, and set upon a Chair standing a little obliquely, so that the light from the Windows may fall upon the right side of the Operator who is to keep his Instruments from the sight of the Patient.

If it be a Child of four, five, seven, ten or twelve years of Age, two Servants may hold him by the Hand and Feet





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Feet on each side, whilst another getting up upon something behind the Chair, and looking forwards, may commodiously lean upon the Patients shoulders, placing the Thumb of both Hands towards his Back, and the other Fingers upon the Clavicles, for the surer hold, the Servant who is on the right side of the Patient, ought to put his left Hand betwixt the Patients Thighs, and take fast hold on his right Hand wrist, and that the Child be not hurt, the sleeve of his Shirt may be pulled down to cover his Hand ; after that the same servant with his Right-Hand shall lay hold of the Leg on the same side by the Foot and Ankle. The Servant on the Patients Left-Hand shall do the same, taking hold of the Left-Arme with the Right-Hand, and with the Left-Hand of the Left-Leg near to the Foot.

In this posture the Childs Hands must almost touch his Heeles, and if he but any way hold fast, his Thighs spread, the *Lithotomist* has Room to Operate, and because Children do extreamly Struggle and Strive, two other servants may like-

wife keep their knees a funder ; but it chiefly to be observed in this posture, that the Patient lean half backwards according to the shape of the Chair, or for want of that, near the Beds side, or the Table, covered with a Quilt or Matress, so that his Fundament may be seen and that his Feet do not rest upon anything, so that he have less force to stir or move himself. Hear is the Figure of it.

There are some Operators who choose a strong Man, and make him sit upon a pretty high common Chair, or upon the end of a Bench, who having a Cushion against his Belly, and a Sheet over it takes the Child, who is to be cut, upon his Knees joyned together, the Man having his Knees close, puts his Hands betwixt the Childs Legs, and so takes hold of his two Wrists ; by this means the Child is put into a convenient posture to be cut, take here the Figure of it.

Besides the Man that holds, it is requisite that some other persons lean upon the Childs Shoulders, open his Knees and keep his Feet steady.

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Nevertheless, seeing the Operation is sometimes laborious, and that the Man who holds may be weary, it is better to make use of the first way.

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### C H A P. XIII.

*Of the different ways of Extracting the Stone, according to the Custome of the Egyptians.*

#### *The Practice of the high Operation*

Sometimes the Chirurgion cannot introduce the furrowed *Catheter*, because of pain or inflammation, occasioned by too frequent searching before, or because there may be fear of putting the Patient to too much pain, or that there may be a *Carnositie* or *Callositie* in the Part, or because the Stone is in the *Perineum*, or in the Neck of the Bladder.

These different dispositions oblige the Operator to consider how and in what manner the Operation is to be performed. The first which is not in use, is cal-

led the high Operation. The second and third are daily practised, and are called the lesser, and the great Operation.

We pretend not to comprehend the two Methods, mentioned by *Prosper Alpinius* in the fourteenth Chapter, of his 3d. Book of the Medicine of the *Egyptians*, where he relates their Practise of extracting the Stone of the Bladder, without making Incision, but only by Dilatation of the *Urethra* by blowing into the Yard.

When I lived in *Egypt*, says he, a certain *Arabian* named *Haly*, in great Reputation for Extracting Stones without Incision, took out several in my presence from *Horam Bey*, a Turkish Commander, in this manner he set about it; he made use of a wooden Pipe eight fingers long, and about the thicknels of one Thumb; having applied this to the passage of the Yard, he blew into it with great force; at the same time with the other hand he pressed the extremity of the Privy Part towards the *Perineum* to hinder the Wind from entering into the Bladder; then he stopt the mouth of the Pipe, to make the *Urethra* swell

and stretch. This being done, a Ser-  
 vant put his Finger into the *Anus*, and  
 brought the Stone by little and little to-  
 wards the neck of the Bladder, and the  
 beginning of the *Urethra*: and then the  
 Operator perceiving that the Stone was  
 near the *Perineum*, he suddainly and with  
 force drew back the Pipe from the pas-  
 sage of the Yard, and so dextrously Ex-  
 tracted the Stone, which was about the  
 bigness of an Olive-Stone. I was pre-  
 sent at this Operation which he perfor-  
 med upon that Turkish Commander;  
 and afterwards I saw him Practise it up-  
 on two Jews, one of which was a little  
 Boy, from whom he took 8 small Stones,  
 and the other was grown up, from whom  
 he took one as big as an Olive. This  
*Arabian* made use of the same Method  
 to draw Stones out of the Bladder.

In the same Chapter he speaks of a  
 Letter written to him by *Octavius Pover-  
 retus*, a most learned Physitian in *Egypt*,  
 for the Common-wealth of *Venice*.

Some Months agoe, says he, an *Ara-  
 bian* of *Sidon*, a Christian, Extracted a  
 Stone without Incision from another  
 Chri-

Christian named *Cophus*, and it was done in this manner. The *Arabian* had many Pipes of different sizes, much in the shape of Flutes, or Pipes which are musical Instruments. They were made of a Cartiliginous matter, which would easily stretch: he introduced the smallest into the *Urethra*, and thrust it forward as far as the Bladder: immediately thereupon, he blew in it with all his strength to make it swell; then he pulled out that Pipe, and put in a bigger, blowing in it after the same manner, and so continued charging the Pipes until he put in the fourth, which was the biggest; and when he thought by these means that he had dilated the passage sufficiently to make way for the Stone, he placed the Patient in a convenient posture, and put one Finger into the *Anus*, to bring it towards the neck of the Bladder where the end of that great Pipe was, into which he endeavoured to make the Stone enter. This being done, he put his mouth to the other end of the Pipe, and sucking with all his strength, he did what he could to draw

the Stone towards him, which broke  
often when it was too big, as it hapned  
to this Man named *Cophus*; for he fetch-  
ed from him but a part of it, and the  
rest being a big and large fragment could  
not be got out.

This way, saith *Kovoretus*, is easie to  
be learnt, and perhaps a skilful Chirur-  
gion might have better Success in the  
practice of it, which is a thing to be  
desired by those who are troubled with  
the Stone. *Beverovicus* makes mention  
of those two ways taken from *Prosper  
Alpinus*. But it is more pertinent in this  
place, without examining the circum-  
stances of those two ways, to give the  
descriptions of those which are called  
the high, the great, and lesser Opera-  
tion.

*De Franco* was the first that practised  
the high Operation, which is so called,  
because it is performed in the *Hypogastre*,  
and though he does not advise the doing  
of it, yet if there were a necessity for it,  
it does not seem impracticable in this  
manner. Let the Patient be laid and held  
fast upon a Matteress or Quilt, then let  
a Ser-



a Servant thrust his fore-finger and middle finger one after another into the *Rectum* to make the Stone rise as high as one can at the same time the Operator is to make an Incision gently above the Groyn and on the side of the *Linea-alba* (the white line). The Bottom of the Bladder may without doubt be opened without hurting the Peritonaeum of the lower Belly, because it is situated between the Duplicature of the *Peritonaeum*, and the fuller that it is of Urine the more Apparent it will be : by means of the Urine the simple Dilator may be conducted, and then the *Stilet*, which after the Dilatory is taken out, may serve for a Conductor to the Forceps. Mr. *Jonnot* told me, that Mr. *Bonnet* a Chirurgion who heretofore Practised *Lithotomie* in the *Hotel Dieu* of *Paris* assured him, that he had cut in that manner. Mr. *Petit* a Master Chirurgion of that Hospital told me that he had seen Mr. *Bonnet* Practise it upon a young Girl.

The Cure is to be performed as of simple Wounds in the lower Belly, or otherways the Method may be changed according

According as Symptoms happen to follow. Experience teaches us that the Wounds of the Bladder are not allways Mortal.

If any one would Practice the High Operation, it would be necessary to try many Experiments on dead Bodyes, after the Water is taken out of the Bladder *De Franco* in the same place, Chap. XXXIII. Proposes another way of cutting, which is immediately after the Incision to put in a Tent, unless the Stone present it self at first, and some days after when the pain is ceased to pull out the Stone. But this way is onely Practised when the Operation is Laborious ; and instead of a Tent, a Pipe is made use of.

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#### C H A P. XIV.

*The Practice of the lesser Operation for Men.*

THE lesser Operation hath been so called because the Practice thereof requires but a few Instruments ; it was invented by *Celsus*, and described in the seventh Book , twenty sixth Chapter,

as it was heretofore Practised ; but if the Stone be not towards the neck of the Bladder, and that it be felt in the *Perineum* near to and under the *Scrotum*, the manner of extracting it is different.

That I may give a clear Notion of this thing, I shall here Observe what happened in many *Lithotomies* in the Year one thousand six hundred and eighty, at the Hospital of the Charity of Paris. Though I had my share in those Operations that were Laborious, yet I shall now mention one that happened to *Monfieur Jonnot*, the Circumstances whereof agree exactly with other Operations which were performed in his presence : this Relation will give ground for making two kinds of lesser Operation for men.

There was brought to him a Boy seven Years of Age that had been diseased the Year before. He needed not the use of the *Catheter* to assure him of the distemper, for with two fingers of his right hand he might feel the Stone towards the middle of the *Perineum* above the former *Catheter*.

To hold it fast, it was needless

put the fingers into the *Anus*, because  
 the Stone being too high it could not be  
 compressed, as is usually done, when it  
 is in the neck of the Bladder ; but hav-  
 ing caused the *Scrotum* to be lifted up,  
 and the Skin held strait, *Monsieur Jon-*  
*not* turning the inside of the left hand to-  
 wards the Cods, he pressed the Tumor  
 with his Thumb and fore-finger on both  
 sides of the Suture where he had obser-  
 ved the Stone ; at the same time he made  
 the Incision on the side of the Suture upon  
 the Tumor, and having opened a passage,  
 with a middle sized Hook, he extracted  
 the Stone ; afterwards feeling with one  
 finger that there were others still remain-  
 ing, he was obliged to keep the place  
 dilated with the same finger that intro-  
 duced the Hook, and that the Stone  
 might not shift its place, he held it fast  
 with the fore-finger of the Left-Hand  
 put upon the upper part of the Wound,  
 and with the Thumb on the lower part.  
 By that means he happily finished that  
 Operation, that he might cut the same Pa-  
 tient by the great Operation ; for having  
 pulled out all the small Stones and Frag-  
 ments

ments that were in the *Perineum*, he introduced by the Yard a furrowed *Catheter* wherewith he found another Stone in the Bladder, and upon that *Catheter* continued the Incision with the other Circumstances whereof we shall speak in the great Operation. I was necessitated to do the same to a young Man of twenty two Years of Age.

I remember that before Monsieur *Jonnot* made use of the *Catheter* to cut him by the great Operation, he introduced into the Yard a great strong Wire or *Stilet* to force down some Fragments that stuck a little higher than the Incision, whilst he compressed the *Uthra* underneath, and then putting his Thumb below the Wound, he drew them out with a small Scoop without any trouble.

This ought to serve when one cuts the Stone out of the *Perineum*, because at the same time we must search if there be none in the Bladder; and that it may be done with less pain and trouble. A *Catheter* that serves to make Women void their Urine may be introduced



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page. 81.



y the wound. This I saw practised upon one who had contracted a Fistula upon cutting, and had a Stone in the bladder, who endured the great Operation after that the *Catheter* was taken out.

It is not needful to make the Patient limp before he be cut by the lesser Operation; if he be a little Boy, and the Stone in the Neck of the Bladder, it is enough, after that he is put into a posture, and held fast by the Servants, that the Chirurgeon dip his fore-finger and middle-finger into Oyl, the nails being pared; and if one Finger be not sufficient, that he thrust them one after another into the Fundament, as far as possibly he can, that they may reach beyond the Stone, and press it down to the Neck of the Bladder, betwixt the *Rectum* and the *Os Pubis*, a Servant in the meantime lifting up the *Scrotum* with one hand, and with the other armed with a Compress leaning upon the Belly, to make the Stone come down; then the Chirurgeon is to dry the *Perineum*, and stretch the Skin very strait with his other Fingers, as it is represented in this figure.

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The Tumor that the Stone covers with Teguments makes, renders the Incision easie on the side of the Suture which may be made long enough for extracting of the Stone; care nevertheless must be had, to avoid the *Rectum*, the *Hemorrhoid Veins* and the *Cord*. One must not fear the spoiling of the edge or point of the *Bistouri*, for every time that it is to be used of new, must be set again.

So soon as the Incision is made, the Stone appears, and then the Operator lays aside the *Bistouri*, and takes a Hook or *Crochet*; he is to hide it in his Hand as much as he can, the end of the Handle being towards the little Finger and the fore-Finger covering the length of its Body: without drawing the Fingers out of the *Rectum*, the Hook is to be slipt in betwixt the *Pubis*, and the Stone in this manner.

When the Hook is behind the Stone and that the Operator intends to pull it out, the Handle of it ought to be held in the Hand with the end resting upon the Thumb, that it may be used with great

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The Fingers are not to be taken out of the *Anus* before the extraction, nevertheless when the Stone breaks because of its softness or shape which is sometimes crooked like a Cressant, if the rest cannot be extracted with the Hook or a little Forceps, the next course is, to remove the Fingers out of the *Anus*, and introduce the Button into the wound for searching of the Stone, and having found it, conduct a Forceps upon the Button to lay hold of it, and gently draw it out.

By what Operation soever an Operation may cut, when the Stone breaks, though many Stones have been taken out, it is still necessary to introduce the Button to search and examine if there be no more fragments remaining.

When those that are of Age and grown up, are cut by the lesser Operation, it is not necessary to make the Incision so high as in the great Operation, because one cuts exactly upon the Stone, and it is also easier to avoid hurting of the *Rectum*.

If a Patient hath been already cut;

the Incision is to be made upon the  
*Cicatrice* or the *Fistula*.

## C H A P. XV.

*The manner of both the lesser and greater  
Operation for Women.*

**W**OMEN and Maids are cut by the  
lesser Operation, introducing  
the fore-finger and middle-finger into  
the *Vagina Uteri*, if it can be done without  
Violence, or into the *Rectum*, in  
feeling of the Stone, and holding it firm  
with the other hand the Opera-  
tor presses the lower Belly to make the  
Stone come down. Then he is to make  
use of the hollow straight *Catheter*  
which being introduced into the *Ure-  
thra*, is to be held by a Servant, and  
the Orifice of the *Urethra* is to be dilated  
by a simple Dilatatory, conducted into the  
*Cavities* of the *Catheter* : it is not to be  
dilated too far forward, because the pas-  
sage is short, and that the dilatation  
may not hinder the unvoluntary  
emission



emission of the Urine, the dilatation being made, the *Catheter* is taken out with the Dilatatory, and the Fingers being still in the same place into which they were introduced, the Stone is pulled out with the Hook or a Forceps, in the same manner as from little Boys.

Women and Girles may be excused from the violence which they suffer by the lesser Operation, because the great Operation is more convenient for the better succeeding in it, the Patient is to be placed upon the Chair, or upon the end of a Matteress, and that Conductor which is shaped like a Sword, and hath a bill, is to be introduced into the *Urethra*, then a small simple Dilatatory; and having made a moderate dilatation, whilst the Dilatatory is still open, the Chirurgion according to his own discretion and the bigness of the Stone, may cut a little sideways to the right and left, the external Orifice of the Passage, then draw out the Dilatatory, and introduce the Forceps along the Conductor, to take hold of the Stone, and to extract it in the usual manner, its scarce

credible how much the *Urethra* may be dilated both in Men and Women.

There are some Operators who having introduced the streight hollow *Catheter* they thrust in one of the Conductors shaped like a Sword that hath a bill and the *Catheter* being drawn out, the slip easily in the other Conductor which is forked, because the first is a line that directs the second. Between those two Conductors which they press betwixt the Fore-finger and Middle finger of the left Hand ; they thrust a Forceps to continue the Operation. Others successfully make use of a narrow *Gorgeret* which serves for a Conductor to the Forceps. Mr. *Jonnot* makes only use of a hollow streight *Catheter*, or of a large *Probe* or *Stilet* for conducting the Forceps.

## C H A P. XVI.

*Of the Practice of the great Operation for Men, and of circumstances during the time of the Operation.*

**J**Oannes de Romanis a Physician of Cremona, in the year 1520. Invented and Practised at Rome, the great Operation, so called, because it requires more Instruments than other Methodes do.

Men who are cut by the great Operation occasion more trouble, not only in respect of the Operation, but likewise in respect of the Cure; because their *Urethra* is crooked, long and narrow, and their way of living renders that Part many times subject to more Diseases than those Parts in Women.

When the Patient is prepared and ready, he is set upon the Chair, or other ways laid upon the side of a Matteress or Quilt, placed upon a Bed or a Table of an indifferent length, his Buttocks a little raised, his Head and Body inclining backwards, and leaning upon the

the back of a common Chair reversed, and so ordered that the hind Feet be near the Patients shoulders, and that he may continue still in a good Posture, two Scarffs are made use of in the manner; having laid them both together long ways, there is a knot tied in the middle of them, and they are put about the Patients Neck, the knot behind. If they be too long, they are shortned by tying a knot upon them, and a noose made of the same Scarffs let hang down behind. This being done the Master taketh the Scarffs on the right side, and a Servant on the left; then both of them stand before the Patient, and make him set his Feet against them, each side of the Scarffs being double, the Master and Man each on his side makes one end of them come before upon the *Clavicles*, and the other end upon the Shoulder Blades, and they bring both crossways under the Armpits; there they twist them together, giving them two or three turns: after that they bring the Patients Knees as near as they can to his Belly, & at the same time draw

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one of the Scarffs betwixt the thighs, and the other on the outside of them, and they joyn both together underneath, giving them one cast over another, in like manner the Patients Heels are raised near to his Buttocks, whilst in the same fashion they tye his Leg; after that they make him put his four Fingers under his Sole of his Foot, and the Thumb below the external Ankle-bone, as if he were to take hold of his Heel. In this posture they tye the Wrist and Hand to the Leg and Foot, bringing the ends of the Scarffs under the Foot like a Stirrop, and then they draw them betwixt the Feet and the Thumbs, because the *Ligatures* must be made indifferently strait, which would hurt the Thumbs if they were tyed underneath, to which the Patients strugglings would not a little contribute. Here you see the Figure of it, in which there is but one Servant represented leaning upon the Knee and Foot, keeping the Legs asunder, and supporting the Patient that the Rowlings and Swathings may be seen; for there ought to be a  
 Man

Man on the other side, and sometimes two on each side when the Patient is strong.

This posture is somewhat terrible to the Patient, and therefore since there are some Men of a strong Resolution and invincible Courage, if they be willing to suffer these *Ligatures*; it will be sufficient to bind their Thighs and Legs in the manner described, and cause their Arms to be held by two Men; perhaps they may like it better to have their hands tied a part by themselves making them lay their wrists one upon another which being tied together by the middle of a Bandage wrapped two or three times about them and two indifferent hard Knots, the two ends are to be brought about the neck and tied together with a running knot, so that the hands rest about the pit of the Stomach or the *Cartilago Ensiformis*.

I saw a Gentleman who had had his Leg cut off, cut at Mr. Jonnots, his Arm was tied on the same side with his Thigh and the want of his Leg was supplied by the number of Servants who held him

him fast if one or both his Thighs had been cut off, he might have been mastered by the number of Men who could have held him by the Arms and Stumps, whilst others leaned upon his Shoulders, without any use of Ligatures.

Women ought to be Situated in the same posture.

Whilst the Scarffes are applying, it is fit that the Chyrurgion should speak to the Patient, but in few words, that he look upon him and encourage him with discourse, shuning every thing that is undecent, because one must be very reserved, to oblige those that are present to be silent and with respect to be attentive, which wonderfully comforts a Patient; calling to mind, that to laugh at the disease, the infirmity, or expressions of a Patient, is to insult over a man in affliction. *Neminem riseris ne miserum riseris.*

It were better to have but a few Spectators, because a great many may incommode the Operator, frighten the Patient, and put a bad construction on the accidents that sometimes accompany the  
Operation :

Operation : it is fit, as much as conveniently may be, that a Church-man should be present to talke now and then to the Patient, that may help to divert his pain, and encrease his Patience during the Operation.

When the Patient is seated, the Chirurgion, is to place his People to support him and make him spread open his knees, lean upon his shoulders, and lift up the *Scrotum* or hold the *Catheter* if a Servant present a Bistouri, he is to be on the right side of the Operator who is to cut with the right hand ; and he shall hold it in this fashion.

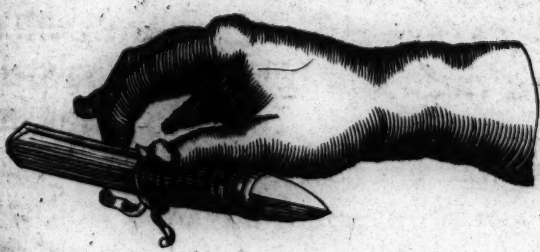
With the Right-hand in which he hides the Blade of the Bistouri. The Operator when he takes it, is to put his hand upon the handle, the other Servants are placed in the same manner for the lesser as for the great Operation ; but they hold the Patient in a different manner as it hath been represented by the Figures.

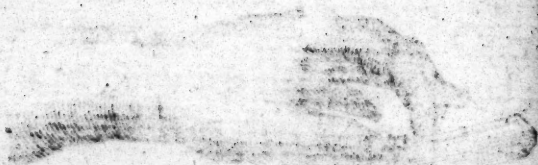
When there is a *Hernia* or burstness the *Scrotum* is to be lifted up very high, and



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and care is to be taken in making the Incision not to hurt the Testicles nor the parts which cause the *Hernia*.

Before the Operation there is sometimes *Procidencia* or falling of the *Anus* occasioned by the straining of the Patient: if the falling be considerable, the Operator may endeavour to thrust it up without violence, and then lay a Bolster upon the *Anus*, which a Servant is to press hard: but if the Servants hand hinder the Operator, there is nothing to be put upon the *Rectum*; for after the Operation is over it is reduced, and many times returns again of it self.

if the Patient have been cut already, the Incision is to be made upon the cicatrice, or the fistula, as hath been said speaking of the lesser Operation one may cut on the Right side as well as on the Left, taking heed not to cut the future, because it does not so easily cicatrice, and is also attended by many accidents.

The Incision in Children is made at least two fingers breadth in length; in men 3 or four fingers breadth or thereabouts, according as the Stone is thought to

to be of bigness, and according to the Grotness of the Subject, Not that ought to be made too large, for when the Stone is in the passage, if the Incision be too small, recourse may be had to a Cut with the Bisturi, or with a pair of Cizars in a convenient place. The Incision of the Skin and Membranes is easily made, but many times the *Urethra* is not sufficiently opened unless we press the Bisturi hard in the furrow of the Staff; Incision is never made in the neck of the Bladder, but always in the *Urethra*, and experience convinces that a great Incision in that Operation is as soon cicatrized as a small one.

The Patient being set in a posture and bound with the Scarffes, his Arms and Legs are held by two strong Men, and if need be, two others take care to keep his knees asunder, a Servant gets up behind the Chair to press upon his shoulders, during the time of the Operation which is performed, if it be possible, in the lesser Operation, or at least in the great (which is commonly made use of by Men and little boys) by introducing a furrow

*furrowed Catheter*, wherewith the Operator searches, and is certain if there be a Stone or not.

If nothing be felt with the *furrowed Catheter*, it is necessary to introduce a *Catheter*, whose bill is not so long, making the Patient void his Urine; and if there be a Stone it will by that means be more easily found, because when it floats, being little and smooth, it will follow the course of the Urine; and the *Catheter* will turn better in the Bladder. When the Stone is found the *furrowed Catheter* is again to be introduced.

If the Patient hath been cut, it is harder to introduce the *Catheter*, and therefore one is to be taken of a size that would suit with a younger Subject, and sufficiently long, according to the age of him that is to be searched.

There are some Operators who hold the *Catheter* themselves when they make the Incision: others cause a Servant to hold it, who is placed at the side of the Chair, opposit to the Groyn whereon the Operator is to make the Incision; for example, the Chirurgion performing his Opera-



Operation on the left side of the future  
the Servant shall be on the Patient's  
Right-hand, and having wiped and dried  
the *Scrotum* and *Perineum*, he shall  
up the Cords with the Left-hand, and  
rest his other hand upon the Rings,  
end of the the *Catheter*, inclining  
furrowing a little towards the Patient's  
left side, and he must take care not  
make it come out of the Bladder, which  
he may avoid: if he bring not the Ring  
of the *Catheter* too near the Belly. The  
Chirurgion ought to mind first bidding  
him hold fast and not waver, and call-  
ing others to lean upon the Patient's  
shoulders, because at that very time  
Operator ought to pull the future  
wards the right side, placing the Thumb  
of his Left-hand near the *Anus*, and  
other fingers near the *Scrotum* having  
felt with the fore finger of the Right  
hand, and observed the place where  
back of the *Catheter* is in the same manner  
as one does to find the Vein before bleed-  
(letting) pulling still the future to the  
Right, with the Right-hand he is to pass  
the Bistouri mounted, which the Servant

on in the place designed, as you see represented by this Figure.

In making incision he is to search for the furrowing of the *Catheter*, into which he is to thrust the point of the *Bistoury*, he is to press hard, swathing above towards the Cods, and below sinking the Wrist, that the point of the *Bistoury* may be always directed into the furrowing underneath the *Catheter* that the Urethra may be exactly cut avoiding the Scrotum, the Rectum and the Hemorrhoid veins; then he shall return back to the *Bistoury*. And take the Gorgereet to introduce it into the furrowing; after that with the left hand he shall lay hold on the *Catheter* by the end which the Servant

To prevent the Fingers of the Operator's left hand from sliding during the time of the Incision, he may make use of a very narrow compress, to help him to presse and pull the future towards the patients right side.

If in making Incision the Operator himself hold the *Catheter*; the Servant who extends the *Perineum* may upon the

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Operation on the left side of the future  
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If in making Incision the Operator himself hold the *Catheter*, the Servant who extends the *Perineum* may upon the

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 persses betwixt his Fingers and the  
 that so he may hold the two sides of  
 future firmer towards the Thighs;  
 that means the Humidity will not  
 him to press upon them as much  
 necessary.

*Monsieur Ruffin* a sworn Chirurgeon  
*Paris*, one of the ablest of his time,  
 formed the Operation in this manner  
 in the Hospital of the *Charity*.

After that he had introduced the  
*theter*, and was sure of the Stone,  
 caused a Servant placed on the  
 ents right side to lift up the Cods,  
 having dried the parts that were  
 the same Servant holding his hands  
 most open, put his right hand upon  
 future pulling it to the right, and  
 Skin to the left with the other  
 which he rested towards the left Gro  
 lifting up the Cods with both  
 hands: The Operator inclined the  
*theter* a little towards the Belly,  
 pressed upon the Rings with the left hand  
 whilst with the right fore-finger he ma  
 ed the place of Incision; then was



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*Bistoury* presented to him, and during the time that the *Servant* held the *Perineum*, stretched to the right and left without the use of *Compresses*; he made the Incision as in the other way: This is the Figure of it; the *Servant* may also with one hand lift up the *Scrotum*, whilst with the other that is extended he presses hard upon the *Perineum*, holding between two fingers the place where the *Operator* intends to make the Incision. The *Servant* may likewise do otherwise, it is enough that he hide his thumbs in his hands, and with one or two fore-fingers he may extend the *Perineum* for the same purpose.

The furrowing of the *Catheter* being covered and the *Bistoury* returned back, he took a *Conductor* with an elbow towards the middle which is composed of iron in the form of a Sword, he thrust the Bill of it into the furrowing still holding the *Catheter*, and when it was introduced into the *Bladder*, he drew out the *Catheter*, and conveyed his forceps betwixt the Branches of the *Conductor* to introduce it into the *Bladder*:



the Conductor being taken out he continued the Operation.

These two ways are very good, and have both their advantages, because when the Operator himself holds the *Catheter* he is sure what place it is in but also after the Incision, sometimes is hard to find the furrowing because Fat, Membrans and Blood that hide it is true that after Incision the point of the *Bistoury* may be left in the furrow and may be held by some body while the Chirurgeon slides the Bill of the *Gorgeret* along the *Bistoury*, but when a Servant holds the *Catheter*, after the Incision is made and that the Operator hath given back the *Bistoury*, we have Just now described, he may put the Nail of his left Thumb into the Wound, and having found the slit or furrowing, thrust therein the *Gorgeret* which ought to be hid in his right hand so that the right fore-finger cover the length of it, suffering nothing almost to appear but the Bill: So soon as the Bill is in the furrowing, he takes the *Catheter* by the rings in the left hand as is here represented.

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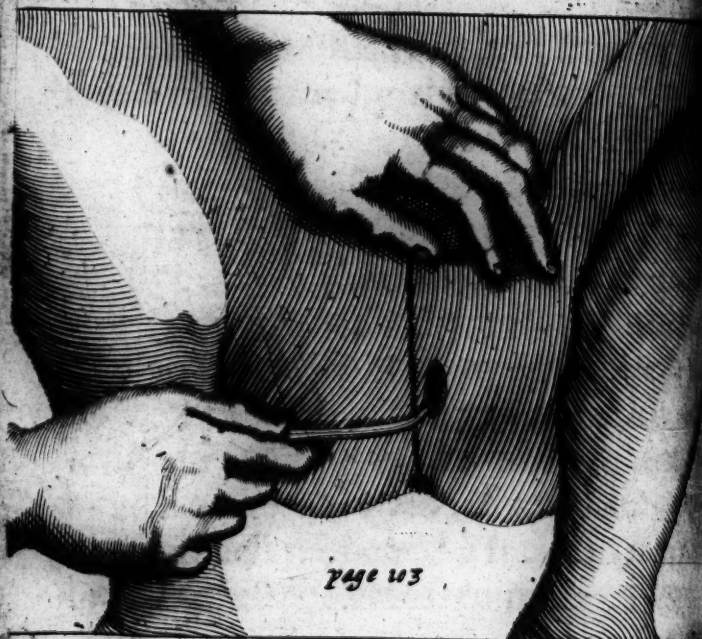
And now there is great care to be taken in introducing the Gorgeret into the Bladder, for if the Patient push hard he may make the *Catheter* to come out, and then bad accidents happen; for if one thrust forwards the Gorgeret and then the *Forceps*, when they are not in the Bladder, a space is made betwixt the Urethra and the Rectum. To avoid mistakes the Operator ought to have an attentive mind, and not talk. And then having passed the Bill of the Conductor called the Gorgeret into the furrowing of the Catheter, he is to hold them fast, keeping the Bill always in; And as if one intended by guiding and making it slide along and under the furrowing, to thrust the Bill upwards; by this means one is sure to introduce it into the Bladder, and holding it with his right hand the Catheter must be disengaged from the Gorgeret by turning it with the left, and then softly and easily drawn out of the Yard. A certain sign that the Gorgeret is in the Bladder, is the emission of Urine along the Conductor; that is, if there be any in the Bladder.

When the Gorgeret is in the Bladder, and the Catheter drawn out, it is taken hold of with the left hand, and a convenient *Forceps* with the right, which is to be thrust upon and along the same Gorgeret in this manner.

Though the Gorgeret or Introducer be put into the Bladder, yet it may be forced out again by the Patients struggling, which may be prevented, by causing some to press upon his shoulders, and others to hold him fast by the hands and feet; the Operator in the mean time who then holds his Gorgeret with the left hand that he may take a *Forceps* in the right, must not forget to take notice if any of that which he hath introduced come out again; for if he perceive it much without the Incision, it must not be thrust forwards to make it enter again as before, nor yet wholly drawn out, because perhaps it may not be out of the Bladder, and if it were, it would be too great a risque, because the Urethra and other parts falling together again a space would be made betwixt the Bladder and the Rectum, as hath been already



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already said ; but having taken a *Forceps* of an indifferent size rather small than too great , he is to pass it along the Conductor, without forcing any thing ; if he find any resistance when the thrusts it gently forwards, the Conductor is to be drawn out ; if he cannot but with difficulty open the *Forceps*, he may be sure that he is not in the Bladder, and then without speaking, the *Forceps* is to be taken out, and whilst it is a washing in warm Water, and making dry, the Chirurgeon shall take the button with his right hand, and if need be lift up the Cods with the left that he may pass it into the Wound, turning it towards the Yard, and conducting it upwards towards the Bladder, in this manner.

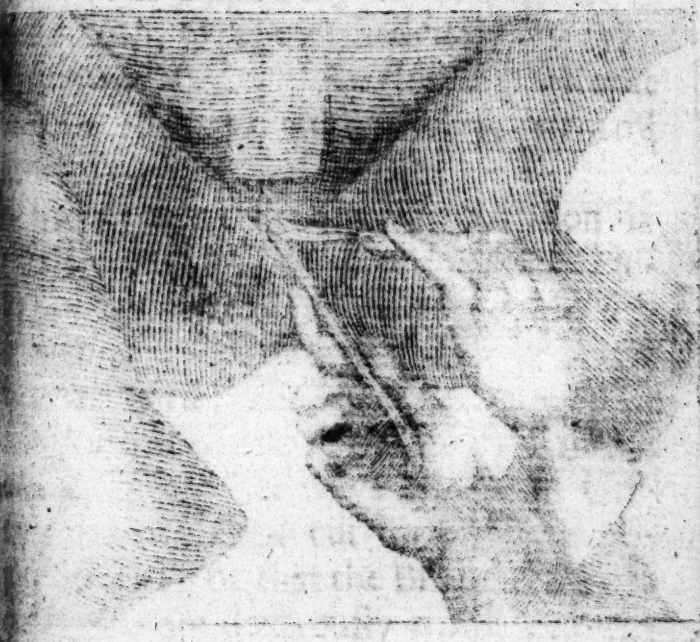
The Button being blunt hurts not the parts in passing, and when it is in the Bladder (which may be known, because then it may be easily turned every way) the Stone is softly to be searched for by gently jogging and moving the Instrument ; which being felt, the Chirurgeon is to take the Button in the left hand, conducting with the right the

*Forceps* close upon the Button into the Bladder, this is the Figure of it.

If it be a crooked *Forceps*, whilst it is introducing, the Bill being turned towards the Yard, the rings are more to be raised, as may be observed in this last Figure, in a manner different from the former Figure, Page 92. which represents the streight *Forceps* conducted upon the Gorgeret with the right hand bending lower upon the left. The Crooked *Forceps* is made use of, when the Stone is thought to be very near to the Groyn; but most commonly the streight *Forcipes* are sufficient, and both the one and the other ought to be laid upon the line of the Button, so that it touch on both sides.

When the *Forceps* is in the Bladder the first thing to be done, is to open it for dilating of the passage, then having joyned the Rings almost together, it is to be gently turned and moved every way to search for the Stone, whilst the *Forceps* is in the Bladder, the Teeth are not to be joyned again, for fear of offending some part, and then the Patients thighs

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thighs may be brought a little nearer together, and not kept at such a distance during the rest of the Operation as they were before the intromission of the Catheter.

It is to be observed that as often as one would change a *Forceps*, or introduce it, there is a necessity of making use of the Button, except immediately after the Incision is made, when the Conductor is introduced, on which the *Forceps* is thrust forwards.

Remember that after the Incision is made, and the Conductor introduced into the furrowing, when one would disengage the Catheter, or that it is out of the Yard, the Patient sometimes struggles before the Conductor be in the Bladder; or other ways when the Urethra has not been cut enough towards the Bladder, or that the Bill of the Conductor be not dextrously thrust into the Slit or Furrowing, instead of entering into the Bladder, a space is made betwixt it and the Rectum. Then must the Conductor be drawn back; and if afterwards one cannot introduce the Button, it will be

be necessary to take the same furrowed Catheter, or one somewhat smaller and less Furrowed: For better passing it into the Bladder, making use of the Second way of searching Men, described in the Ninth Chap. by that means the Catheter is gently introduced into the Urethra without turning of it any way, lest it should come out at the Incision, and when it is passed into the Bladder, the furthering is to be searched by the Wound with the Bill of the Gorgeret, that so the Operation may be continued.

When the Gorgeret is in the Bladder, if it be feared that the passage is not easy enough, a close dilatatory is to be taken, and held in this manner that one branch of the handle pass upon the thumb betwixt the right fore-finger which the Chirurgion is to extend a long the dilatatory, and the other three fingers underneath, that it may be held fast: it is introduced along and upon the Conductor, and without turning it any way, the bottom of the Incision is dilated in length as much or as little as it is thought fit, making the branches of the handle



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come near one another in this manner.

There is as little use of this made as conveniently be, nevertheless if necessity require it is used; after which it is pulled out, and without parting from the Gorgeret, the Operator takes a close *Forceps* conducting it into the Bladder to search for the Stone, where it must be gently turned and jogged every way, as hath been said.

It is to be minded also that it hath been said, that so soon as the *Forceps* is in the Bladder, it may be moderately opened with both hands to dilate the passage a little, and at the same time to bring the Rings almost together, and afterwards with one hand it may be thrust and moved gently to the right and left, up and down where the Sphincter of the Rectum is, to feel the Stone, sometimes turning the *Forceps* so that one of its Rings be higher than the other, thereby endeavouring to lay hold of the Stone, which may be flat, or lye hid at one side of the Bladder.

When

When it is found, the *Forceps* is to be opened with both hands, to get what has been felt. The Operator is sometimes so fortunate as to take good hold of the Stone in a small time which is to be known, because after the *Forceps* hath been opened, the Rings cannot be made to meet again, and so hard matter is to be felt between the Teeth: This is the surest sign, for very small Stones may be taken hold of about the middle of the *Forcipes*, where they are more bent than else where; which will not hinder but that the Rings may be brought to meet; but still some hardness is to be felt. This hath happened to me, and it was thought that there had been nothing; but I felt that hardness in the *Forceps*, and I have the Stone of that Operation still by me.

When the Stone is laid hold of, one must not at first pull towards him, but it is requisite to turn gently the *Forceps* to the right and left, holding it with one or both hands according to the convenience of the Operator, that he may know if the Stone lye right in the

Teeth, and disintangle it from among the Plicatures, pulling to him afterwards without violence: the Rings of the *Forceps* are to be raised and low'rd alternately, to make the Stone slide with greater ease. If one have made use of Crooked *Forceps*, the Bill of it must have been turned towards the Pubis just at the passage of bringing it out; and the Rings be very near the Yard: that may not be mistaken, it would be necessary to put a mark upon one of the Rings of the *Forceps*. When the Stone is in the *Forceps*, special care is to be had not to turn it too round, because if the Stone be big and uneven, it will much confuse the parts of the Bladder: If the Stone be small, it breaks and moulders, and the *Forceps* easily shuts; but then one feels as if it were a heap of sand, and then the Rings are not to be brought wholly together, because then a small matter of gravel would be drawn out, and the parts of the Bladder might be hurt; the *Forceps* with what is betwixt the Teeth of it is to be pulled out, and this is to be repeated as often as necessary.

reiterated conducting it upon the Bladder as often as shall be judged necessary. And then a Tent or Pipe is to be introduced, as shall be mentioned in the following Chapter.

When the Operator judges the Stone to be flat and of the shape of an Almond, he may endeavour to make one of the Teeth of the *Forceps* slide under, and the other above; though commonly the Stones are taken sideways, and when it is taken hold of, he is to turn the *Forceps* again, so that the thickness of the Stone may answer to the length of the Incision.

Sometimes a Stone of the shape of a large Hens-Egg is caught hold of by its two ends: which may be guessed by the great distance that is observed between the Rings of the *Forceps*, may one see it when the Stone is near the passage. To keep it fast, the *Forceps* is to be thrust back into the Bladder, the Teeth of it a little opened that the Stone may be loose, and it will turn without force. By that means it is afterward taken hold of by its thickness sideways, and the passage thereby less dilated.

(III)

If the Stone be adherent and stick very close, it were better to delay the extraction of it, because suppuration contributes to the separation thereof. And if the Operator cannot hold the *Port*-  
fast enough, he may make use of a  
napkin to wrap the Rings in, that his  
hands may not slip.

When it is excessively big, it is better to let it alone than to expose the Patient to evident Death, especially if Age and other circumstances are contrary to the Operation. *Parvus* and *Beveringham* advise to break it with *Portipes* whose Teeth resemble the Teeth of a great Saw : And *Tevenin*, Chap. 121. Of his Operations, proposes the introducing of a pretty long Tent or Pipe, to consider that the Stone fall not upon the sphincter, that so the Patient may make use of water; that Pipe should shut with a Screw, that it may be used as need requires.

When all the Stones have been extracted in an Operation, it is not needful to introduce a Tent or Pipe: Nevertheless there are some Operators who  
always



always use them, to void, as they find the clots of congealed Blood; but they liquifie and come out by the Yard, by the wound without a Tent which hinders the reuniting of the divided parts that still are Bleeding. It is true that they who well understand the conduct of that Operation may succeed in it without leaving a Tent or Pipe long in the place; but yet it is sometimes necessary to use it for some days when there is an Ulcer in the Bladder; the injections may be the more conveniently made into it.

## C H A P. XVII.

*What time the Patient may be kept under the Operation, and what is to be done, when it is hard and laborious.*

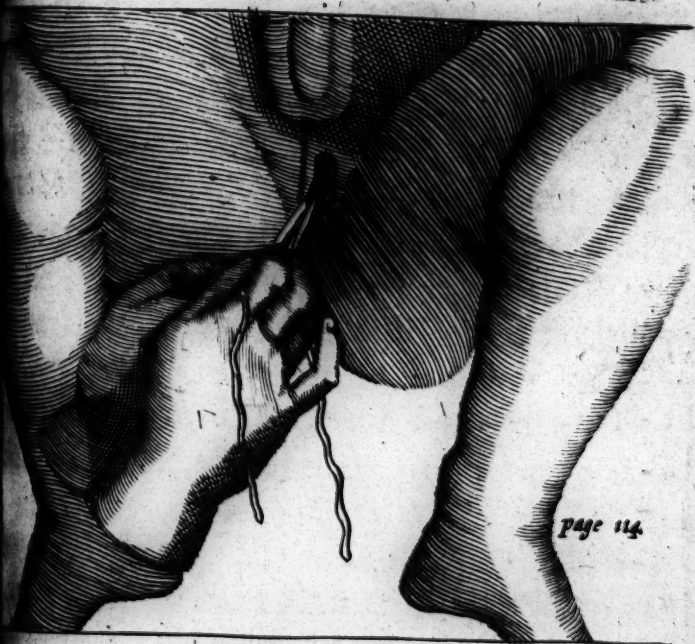
**A**N Operation is called hard and laborious, when by a skilful man it is not performed in a short time. In such a case the Patient is not to be held in pain until the Stone or all its parts are extracted. Sometimes it so stops that it

passage, that the Conductor or *Forceps*  
 cannot but with great difficulty enter :  
 and therefore an expert Chirurgeon will  
 not scruple to take out his Instruments,  
 and with his Finger or the Button thrust  
 back the Stone into the Bladder ; and  
 will afterwards make use of the Button  
 and *Forceps* to continue the Operation.  
 It many times happens that after that  
 the Stone hath been often laid hold of,  
 it escapes and mounts up again, because  
 the *Forceps* gives way, or the Teeth of  
 the *Forceps* are not good, or otherways because  
 the Stone is monstrous in respect of the  
 passage, or that it breaks when it is held  
 too strait, or because it is soft, and can-  
 not easily be extracted when it adheres.  
 These circumstances are to be obser-  
 ved very exactly, and the Chirurgeon  
 ought not to be more careful in his Ope-  
 ration, than in considering the strength  
 and Age of the Patient, with the time that  
 he has been upon the Chair, keeping him  
 under the Operation rather too short a  
 time than too long, lest he be surpris-  
 ed by death, if he be made to endure too  
 much : But if after the Operation hath  
 been

been methodically carried on, nothing is extracted because there was no Stone in the Bladder, or that the Stone is small or if fragments remained, he may take the Button with a scoop by the front or middle; and introduce the scoop or spoon into the wound, and so endeavour to extract somewhat, and this having been two or three times reiterated, he ought to make use of a Tent or Pipe proportionable to the subject, and mounted according to Art. For introducing it he may make use, if he pleases, with more security of the Button, push it into the Incision, and having dipped the end of the Tent in Oyl, he may conduct it along the Button even to the Bladder, in this manner.

The ends of the *Languette* or piece of Linnen wherewith the Tent is mounted may be tied to the girdle that is made with the bandage, one before and the other behind: or otherwise one may carry an end along each Groin of the Patient, and leave them on the *Pube*. Next day or some days after, the Tent is to be taken out, and if there remain

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still somewhat in the Bladder, one may endeavour with the Hook, or the Scoop of the Button, or with the *Forceps* conducted by the Button, to extract the Stone whilst the Patient lyes a Bed; or otherwise he may be placed upon the Chair as at first, yet without using of Ligatures or Scarfs, because then the Patient is weak, and it would put him in too great fear.

When the fragments are but moderately big, they may be extracted a Bed, and it is good to leave the Tent until one be certain that there is nothing more remaining within: which may be known, if one observe what came out during the Operation, or afterwards with the Medicines.

Moreover, after the Tent is taken out, one may introduce a Catheter crooked at the end, or a big Wire through the cavity of the Tent, without taking it out; and by several little jogs or motions, search as far up as can be done without Pain. One may likewise make use of a Feather to clear the Tent of Blood, or of Slime and Purulent mat-

ters that are formed in the Bladder. The injection of warm Barley Water is proper, and after the first day one may gently press the Belly with the hand in time of Dressing.

## C H A P. XVIII.

### *Of the Symptoms of Lithotomy.*

**T**H E Symptoms of *Lithotomy* are divided into those which accompany the Operation, and those that follow it, the first called Concomitant and the others Subsequent.

Accidents which accompany the Operation are Hemorrhage or Bleeding, the length of time which makes it to be called Laborious, the Bruising and Breaking of the Stone, the difficulty of extracting it, or the impossibility, the number and fragments which cannot be extracted because of their bigness, numerousness, or weakness of the Patient: sometimes also nothing is found, though the Patient hath been searched and examined before. A contusion Supervens if the *Forceps* be thrust

too rudely or too frequently when it is in the Bladder, Excoriation, or even a Rupture of the Bladder, or other parts as well by the bigness and asperties of the Stone, as by the Teeth of the *Forcipes*, if they be shut close when they are in the Bladder, because it is wrinkled, and the sides of its Body or Bottom may be laid hold on without the Stone or with it.

The Symptoms that follow the Operation in the Cure by *Lithotomy*, are a painful tension of the Belly, the retention of Urine, Watchings, Inflammation in the parts affected, Looseness, Diarrhæa, Worms, Ecchymoses, Fluxions, Abscesses, Excoriations, Itchings and Putrifaction, Ulcers in the *Scrotum*, and the Neighbouring parts, Ulcers and Putrifaction of the parts of the Bladder, too great, or too long Suppurations, voiding of Purulent matter by the wound, or with the Urine by the Yard, Fevers, universal or particular Consumptions or Marasmus's, Hemorrhages in the time of Operation, Syncope's, Convulsions, Vomitings, Lightheadedness or Deliriums and Shiverings.

The painful tension of the Belly is caused by an inflammation that attracts a Fluxion, because the Ligaments which suspend the Bladder, and the other parts to which it adheres, have suffered violence. The Fever and Restlessness proceed from the *Intemperies* of the chief parts agitated by the passions of the mind. And the Hemorrhage from the Incision or Erosion of the Vessels. The retention of Urine is occasioned by coagulated Blood, or the inflammation of the part during Suppuration, or by some stone fallen down from the Kidneys, or a fragment remaining after the Operation. The inflammation comes from a circular motion of the Humours; the Scoorings, looseness of the Belly, and Worms in Children through the abundance of Phlegm; the *Ecchymosis* is an effect of extravasated Blood; the Abscess is produced by a collection and continuance of Humours in the interstices of the parts: the too great and too long suppuration, by the quantity of the matter whereof the Abscess is formed, or by the Ulcerated Kidneys, and

by

by the liquefaction of the Humors of the whole Body, of which part do suppurate whilst the rest are dispersed by Transpiration or Looseness, which causes at the same time a Marasmus or extenuation of the whole Body: The Ulcer of the Bladder is caused by contusion and suppuration of its parts, which excites the running of Purulent matter by the Yard or Wound: Fungous carnosities by a superfluity of ill concocted and too ferous Blood; the Itching and excoriation are the effects of the sharpness of Urine, or of too strait bandage; the Putrification of the Ulcer comes from the corruption of the Humors and of the Air, or from the too great humidity of Medicines, and the Virulence, from the Acrimony of the Humors and Medicaments: The Vomiting happens after the Operation, because many nervous Fibres of the sixth pair are distributed and inserted into the Ventricle. There are other accidents occasioned by the distribution of the Nerves, which pass through the holes of the *Os sacrum* common to the Sphincters of the Bladder and Anus,



which have been bruised or lacerated by the *Forcipes*, or by the asperities of a great Stone, especially when the Operation hath been hard and laborious.

The Fainting or Syncope, is occasioned by a great Flux of Blood, and the dissipation of the Spirits: The Convulsion happens by Vomitings, the Diarrhea, Hemorrhage, which hinder the Nerves from receiving a sufficient quantity of Spirits: The Delirium and Lightheadedness Supervene, when there has been so great a dissipation of the Animal Spirits, that the Brain retains not enough for it self, and for supplying the whole Body with a quantity sufficient for performing the functions of its several parts. In a word, Fate puts an end to all these accidents by destroying the Machine; that is to say, by abolishing of Motion at the instant when the Soul is separated from the Body.

If any be surprized that we have spoken nothing of Pain, they ought to consider that that is a Symptome, or rather an essential property of all diseases of the parts that are capable of feeling,

since

since it always happens, where there is an *Intemperies* with a solution of continuity of the soft parts and by consequence it is more sensible in *Lithotomy*, than all the other accidents that we have been speaking of.

These Symptoms have their causes, their Diagnostick and Prognostick signs: some are the cause and the signs of others, and all the Symptoms in general, are caused by Pain, Fear, Hemorrhage, Contusion and Dilaceration of the parts.

The Prognosticks are taken from the time, the violence, and the state of the subject in which the accidents happen.

The Symptoms that appear at first, are not so dangerous, and those which last long, or happen in a *Cacochymick* Body, are more to be feared.

An Operator who is expert in performing the Operation will avoid many concomitant Symptoms. There are some nimble blades who have the knack of feigning that they have extracted a Stone, and convey one, though they have found none.

The Symptoms that follow the Operation, are either by themselves apart, or

or many together according to their Nature, corrected by various Medicins.

The first care is to assuage Pain by Imbrocations and Fomentations: a Hemorrhage is sometimes to be feared, and therefore astringent topicks are to be employed for preserving the treasure of life. The loss of Blood ceases commonly through the weakness of the Patient because the Medicins that are applied to this part are dissolved by the Urine, and besides no other bandage but the contentive can be used, when in other parts one may put his Finger upon the Orifice or opening of the Vessel, or if it is in two, apply to it a Button, a Ligature, Pledgets and Compresses. It is commonly observed that the first dressing kept on, for the space of Twenty Hours at most: it is tenderly to be taken off, leaving a Pledget upon the part out of which the Blood does Issue, if it can be known; and if the Hemorrhage recur, recourse is had to astringents.

CHAP.

## C H A P. XIX.

*Of the Method of curing those that are Cut, and removing their Symptoms.*

**W**E come insensibly to the cure by *Lithotomy*, the method of which is either general or particular. Having spoken of the Causes, Kinds, Signs and Prognosticks of the Symptoms, it is now proper to give you a notion of those things which ought to be observed from the time of the Operation until the perfect cure of the Patient. By that means we may treat in particular of the remedies against accidents; since they happen whilst the Patient is in the Surgeons hands.

By the general cure by *Lithotomy* we understand that wherein no Symptoms happen which are of the Nature of a cause. By the particular cure, that which is attended by troublesome accidents, such as cause the methods to be changed: each of these we shall speak apart.

Supposing

Supposing that the Chirurgeon hath successfully performed his Operation, must dress the Wound, and endeavour by the help of Medicines to cure it.

The first thing that is to be observed after the Operation, whilst he that cut is still in posture, and that with expedition he is a clearing of the Linctures, if any have been used, is to lay upon the Incision a square dry Compress about three or four Fingers breadth, bigness and indifferently thick, and binding it on with one hand, to take the Patient about the Body, and with assistance and help to carry him to Bed.

We have already said that the Compress may be put on before the Operation afterwards taking a Frond or Towel suitable to the Patient, it is to be laid upon his Back above the Buttocks, for the two heads or straps called the twins, and which may be then called the superiour, may serve for a Girdle, the Bottom or middle of the bandage, in the meantime, declining towards the place where the Incision hath been made, which hinders the stopping up of the *Anus*.

Before



Before the two superiour straps of the Frond or Truss be tied together for making of a Girdle, Imbrocation is to be made upon the Belly and the Cods with the warm Oyl of Roses and Camomile, to prevent the painful tension of the Body, and to cure it, and an Astringent Plaster is to be applied to the Belly, with the *Ventriere* or Belly-lice soaked in warm Oxycrat; then fast the two superiour or upper straps of the Truss be tied together towards the Patients right side, the one of them passing under the Collar.

Afterwards, the Compress which was put upon the Wound dry, and is since the Operation steeped in Blood, is to be taken off, and Medicines applied to the place.

If there be a Hemorrhage, Astringent, powders and Pledgets are to be made use of; and when there is no Hemorrhage, an indifferent thick Pledget covered with Astringent is to be put upon the wound with a Triangular Plaster covered with Astringent, and the Cods are to be kept up with a Truss whose ends pass along

along the two Groins, and afterward  
 small Square Compress dipped in warm  
 Oxycrat, as the Truss ought to be, is  
 be put upon the Plaster holding all the  
 dressing of the Wound with one hand  
 (for one must be ambidexter ) and with  
 the other hand taking hold of the Ban-  
 dage betwixt the Thighs, by the end  
 which is near the *Anus*, it is to be  
 brought over the little square Compress  
 that is upon the Wound, and carried  
 along the left Groin; declining be-  
 twixt the Thigh and the Hand that  
 holdeth on the dressing, and that end  
 to be left upon the Girdle still holding  
 the dressing fast: then one must take  
 the other end which is more remote from  
 the *Anus*, and giving it a turn outward  
 towards the Body of the bandage  
 make an equal compressure, it is like-  
 wise to pass over the Square Compress  
 that is upon the Wound, and disengag-  
 ing the Fingers wherewith it is held  
 is to be carried along the right Groin mak-  
 ing but a very slight compression: then  
 the hand that held on the dressing is  
 to be removed, and with the help of both

hands

hands this last end is conveyed under the girdle before, and on the right side, and then tied with the knot, called the Mariners knot; the same is done to the other end on the left side; or otherwise if both ends be long enough, after they have been brought under the Girdle, they are tied together by the Collar towards the left side, during the whole time that the bandage is used, a *Ventri-* or Belly peace is to be applied to the Patient, and care had that the ends of the bandage keeps on the dressing of the Wound, for the Body of the bandage must not descend lower than the last Buttock: afterwards the Thighs must be made fast and kept at a moderate distance from one another with the garter or thigh band tied together under the knees, with the knot on the outside towards the Thighs.

If it be a Woman that has been cut, the dressing is to be put upon the Belly as to Men, and the Pledget covered with the stringent upon the *Orifice* of the *Ure-* *bra* with a Plaister, Compress and the Frond or double T, of which

a Girdle is to be made as with the Truss and the other ends which make the tails of the T, passing betwixt the thighs and crossways upon the dressing, will hold it fast, and press it as little as one pleases. When the Patient has a mind to make water, the bandage is to be taken off; they are not subject to many accidents, and they are sooner cured than Men.

○ In Men the first dressing may be removed within twelve hours after the application, renewing the Imbrocation, with the same Astringent and the same Belly piece, for four or five days at least or more, if the Belly be Swelled or Pain'd; one may likewise make use of Fomentations of the Belly with rough Wine and Red Roses, and sometimes they are to be reiterated four or five times a day.

○ The Wound is to be dressed with the Liment of *Arceus* half Melted, to make it Penetrate the more, with the Finger, or Feather of a Quill introduced to the very bottom of the Wound as gently as may be: then a little flat Pledget dipped

the same Liniment is to be applied upon the Lips of it, with a Triangular Plaster, soaked in warm Oyl of Roses, using Compress, and a Truss moistened with warm Oxycrat; and a clean dry *Fronde* or bandage to be changed at every new dressing as at first: for the following days the Patients are to be dressed twice every four and twenty hours, duly changing the dressings, except that of the Belly, which may serve for the first days, and ever now and then the Patients are to be made dry; which is observed to be done when they are a dressing, not forgetting to make them clean for avoiding Gangrene. They are to be dressed with speed and diligence, and the Wound kept open as little as may be, having a fire always in the Room to correct the coldness of the Air.

After five or six days there is no more made of Oxycrat, nor Astringent, made of the Triangular Plaster, but on-ly of a dry Belly piece; and in the In-tervention three or four drops of the Lin-iment of *Arceus* with a Feather or the end of a finger, and a flat Pledget upon the Lips



of the Wound. The Balsam of Peru and of *Capivei*, which is called natural white Balsam, are Sovereign remedies for Agglutination; that of *Capivei* is excellently good from the beginning to the very end. Some take equal parts of the Liniment of *Arceus* and the Oyl of Eggs, others make use of the Liniment of *Arceus* during the whole cure, others use of *Capivei*; some there are that make a Mixture of equal parts of *Basilicum*, *Opoponace*, Turpentine, and Oyl of Eggs or the Liniment of *Arceus*, and the success is like, provided the Operation hath been fortunate, and no bad accidents supervene. Upon these Medicines a Pledget is put, and a Plaister of *Diacalciteas* a little longer than the Wound, and of a breadth proportionable to the subject, a Cord Truss to bear up the Cods, a Counter-press, and a bandage upon the Wound as has been before described, pressing a little harder than in the beginning. For the *Farretiere* or Thigh band is used till the cure be perfected. After the first days are over, it is proper to advertise the Patient to press with his hand a little

upon the dressing, that he may more freely make water in his Urinal.

Though the Wound of it self requires consolidation, yet care is to be had that the Lips and Teguments thereof turn not inwards; and after some days when the Fluxion is over, or if none have happened, with the help of little and very narrow Compresses the Lips are to be kept equally raised, and a little distant, only the *Orifice* of the Incision; for that purpose several Compresses are to be put near the Lip which is on the side of the left Thigh, to the end the bottom may consolidate, before the Cicatrice be made. When one is sure of the bottom, then he is to use desiccatives upon a little Pledge, and several Compresses unequal in thickness and indifferently narrow, one on each side, and a Plaster to cover them, and over that another little Compress transversely at the upper part of the Wound and over these three, two others of unequal breadth, to keep the bandage, by that means, the faster. If there grow any fungous carnosities, they are to be consumed with calcined Alum, or with *Lapis infernalis*. K 2 There

There are some Patients that by reason of a good constitution of Body are cured in eight, fifteen, or twenty days; but the ordinary time of curing *Emphysema* is thirty or forty days.

It is prudence in a Chirurgeon to observe the alterations that happen to the Patient; that he may discover the bad Symptoms that we have mentioned which change the method of the general cure, and which require to be prevented, or corrected by a particular method contrary to their Nature.

This is performed by Diet, Chirurgery, and Medicines: the Diet, on the seventh or eighth day consists in abstaining from Wine, unless the Patient be very weak; he is to use a Tisane made of the shavings of Harts-Horn and Ivory, or with a little Lint Seed and the Roots of Mallows and Marsh mallows, or at least, in time of need he is to drink of Chalybeat Water, or of the Tincture of Red Roses, yet not according to his Thirst, but a little less for fear of a Looseness; it is enough that in four and twenty hours he take five

six messes of Broth, and very few Eggs : Blood-letting, and cooling and Anodyn Glysters are good if he have a feaver, and pain in the lower Belly, but all by the advice of a Physician. And after the first seven or eight days are over, and that the Symptoms have ceased, his food is to be made stronger, beginning with Porrage, or Panadoes, then a little Meat and Bread, after that he hath been Purged, which is commonly to be done about the fourteenth or fifteenth day after the Operation.

Chirurgery is necessary, when Blood letting is to be reiterated, abscesses and their *Sinus's* opened, places where there is a disposition towards putrifaction scarified; sometimes Cizars are made use of, to clip off Membranes and other parts that are wholly corrupted; Medicines are changed to discuss tumors, and ripen abscesses; the Ulcers of the *Scrotum* and Bladder are cleansed by Injections and other Medicines that resist mortification and putrifaction. Extraordinary Symptoms appear before one another, or many together which make a complication

plication: we ought therefore to speak of the remedying of every one of them in particular.

It hath been said that Pain is mitigated, by *Oxyrrhodium* upon the Belly, the Groins, and the Cods; Hemorrhage by Astringents; a Feaver by Blood-letting, especially if the Patient hath not lost much Blood in the time of the Operation, or after, and if he have strength, restlessness is conquered by cooling Apozoms, Emulsions, and Soporificks at the first days; the inflammation of the parts after suppuration is extinguished by the *Ceratum* of Galen, or by *Nutritum*; fragments and small Stones are voided with the Urine, and by the injection of warm Barley water, or they are extracted with the hook, the Extractor, *Forceps*, or the Scoop of the Buttock. The too great retention of Urine is cured by passing the Womans Catheter into the Wound, and then by a Tent or Pipe left in it for some days; Gripings and Looseness are stopped, by Anodyn and Carminative Glysters, and by Juleps of Red Poppy, the Oyl of sweet Almonds, Plantain



Plantane Water, and Harts-Horn Jelly :  
 Worms and Vermous matter the cause  
 of their generation, are brought away  
 by Medicines and Physick which help  
 digestion, as those into whose compo-  
 sition enter, Rheubarb, Wormwood,  
 Tamarinds, *Aquila, Alba* in a small quan-  
 tity, &c. The Ecchymoses, Fluxion  
 and moderate Tumors are dissipated by  
 resolatives and discussing Plaisters, by  
 comfortative Cataplasmes and Anodynes,  
 according to the degrees of the evil, and  
 the rules of Art, observing to apply  
 more comfortatives, than simple Emolli-  
 ents and discussives, because of the Hu-  
 midity of the part: Abscesses are form-  
 ed commonly above the Incision, and ma-  
 ny times pressing the head of the Tu-  
 mor with one Finger, and the sides with  
 other two, the Purulent matter is Eva-  
 cuated by the Wound; but if it be per-  
 ceived that the skin is very thin, and  
 the matter ready to burst forth in a tor-  
 rent, they are to be opened to the very  
 bottom of the Sinus, and the cure per-  
 formed according to Art. Deterfive in-  
 jections are made use of to mundifie and

cleanse the Bladder; and Emulsions are given to the Patients, that the purulent matter may the more easily be evacuated.

Excoriations and Itching are cured by *Nutritum, Unguentum album Rhafis*, the Cerat of *Galen*; *Pompholyx* dissolved in the Oyl of Roses, and other desiccative Anodynes, taking heed not to compress the bandage for some days; and if the Excoriations and Itching possess a great space, the Patient might for some time be dressed without applying the Froon or Truss, but only the Triangular Plaster covered with convenient Medicines, upon the Medicaments of the place where the Operation hath been made, making always use of the Thigh band to keep the Thighs at a convenient distance one from another. The same thing is to be practised when the *Scrotum* or Testicles are much swelled and in pain, and on that occasion Anodyn and emollient Cataplasms, &c. spread upon Linnen Cloath cut in the shape of the Plaster called the Plaster for the *Scrotum*, are to be made use of, with a bandage or suspensory

fory, which is applied as in other distempers of the Cods or Testicles.

Patients that are cut are subject to other accidents when they have lain long upon their Backs; they are to be remedied according to their kinds and degrees, and when they abate, the common bandages are made use of, such as the Truss, Frond or double T. which is more proper in the end than in the beginning, because it compresses more easily, and it is more commonly made use of for Women than for Men: to use it aright, the Girdle is to be put about the Patients Body, and one end of it being carried within the Collar, and both ends tied, one of the ends of the Tail of the T. is to be taken betwixt the Thighs, and making it pass obliquely upon the dressing, it is tied to the Girdle in the opposite side to that from whence it is taken; the same is to be done to the other end, fastening them together by a kind of a knot called the Mariners knot, having a care not to stop up the passage of the Anus.

Fainting

Fainting, Convulsion, and Vomiting go often hand in hand together; but the last appears more frequently than the others; it is remedied by Wine, and by cordial Potions made of Treacle; the Confection of Hyacinth, Alkermes, Coral, prepared Pearle, Powder of Viper, Syrup of Pomegranats, in Balm Water and Scorzonera Water, *Cardus benedictus*, and Woodforell, &c. according to the various indications: the Medicines and the Dose of them are to be chosen and determined according to the advice of a Physician, giving them at first in a small quantity often renewed, because of the debility of the Stomach.

When the Vomiting is stopt; the Convulsion ceases, and the fainting is cured by succulent nutriment, such as good Gellies, strong Broths, new laid Eggs which strengthen the Patient if they stay with him: the reason is evident, because inanition is the cause of these two Symptoms, and the Animal Spirits being but in a small quantity, prick the Nerves, which contract and draw towards their Origination.

The

The Wound does sometimes foul, and by too great suppuration, according to *Guy of Chauliac*; it is observed to degenerate into a fordid Ulcer, and most commonly virulent, because of the Acrimony of the Urine, and irritated Humours that grow mordicant and biting. These kinds of Ulcers are never without Inflammation, Itching, and Excoriation of the part: for such accidents we are to make use of diverting, restraining and local Medicines, applied according to the Temperament of the part, and the counsel of the same Author, in the Chapter of Wounds with Hemorrhage: When many Symptoms appear together, the same Rule is to be observed, and to have regard to the order, the urgency and the cause, and especially to that which is most urgent, amongst other things carefully observing the effects of topical Medicines, wherein Chirurgery does most consist.

For curing of Deliriums and Light-headedness, strong broths are given, minced meat made with Veal, Pullets, Partridges cut small and put into an earthen



then Pot glazed, without water, well luted, and digested in *Balneo Mariae*, hearty food that is full of good Juyce, and of easie Concoction, for speedy repairing of the inanition, and tempering the Animal Spirits, the truth is a Dilirium with cold in the Extremities are of such affinity, one with another, that they may be put into the same rank, and a Dilirium after *Lithotomy* is, as it were, the last degree of the Disease, the struggling of Nature, and the forerunner of Death.

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### C H A P. XX.

*Of the Ischuria, or suppression of Urine.*

**T**HE Bladder is a Membranous part, that may be distended and enlarged by the quantity of matter contained therein, and when it is full or stimulated, that which is within opens the Sphincter that it may make to itself a passage into the *Urethra*.

When

When all things are in a natural state, Man suffers no inconveniency because the things contained within are in due time evacuated; but congealed Blood, or coagulated *Pus*, condensed Seed, a Stone, a Fungous Body, gross Humours, or Phlegm with Sand, one or more of the inferiour Vertebraes Luxated, hardened Excrements, a Child dead in the Mothers Womb, a Carnosity or Callosity sometimes stop the Sphincter of the Bladder, or a place of the *Urethra*, it is the same when a Viscous Humour causes a Numness of the Bladder, or when a Patient is in a dull and drouzie fit; which is occasioned by a diversion of sensation, an extasie in the Brain, or a convulsion of the Nerve which goes from the *Os sacrum* to the Sphincter of the Bladder, and by Malignant Fevers.

Besides those causes of suppression of Urine which we have reckoned up, we are to take notice of the shrinking or lagging of the *Urethra*, to which Old Men are subject; the Compression of the Neck of the Bladder caused by the falling down,

down, or inflammation of the Matri-  
 or the Prostates and Paraſtates, the in-  
 ternal *Hæmorrhoidæ* Veins, or by  
 great quantity of Urine which diſtends  
 the Fibres of the Bladder, as is related  
 by *Pareus*, L. XVII. of a Young Man  
 who having kept his Urine too long  
 fell into a ſuppreſſion though he had a  
 Stone, and was cured by the Catheter.  
*Fabrit. Hild.* ſays, L. de *Lith.* Chap.  
 Col. I. that that excellent Mathematician  
*Tycho-brahæ* being in a great aſſembly  
 at *Prague*, where being forced to keep  
 his water very long, he fell into ſo violent  
 a Suppreſſion, that he could not be  
 cured, but died of it.

The retention of Urine, from what  
 cauſe ſoever it proceed, produces a violent  
 Pain, and inſupportable inflammation  
 in all the Neighbouring parts of the  
 Bladder, from whence a ſuppreſſion is  
 occaſioned, becauſe the Urine is not  
 voided, and that it is continually augmented  
 in quantity. In that caſe Patients  
 are all over in a heat, their eyes  
 look red, their face burning, have an  
 Oppreſſion, Reſtleſſneſs, Fever, a hard  
 painful

painful and very large Swelling above the *Pubis*; bilious Vomitings, and all these troublesome Symptoms reduce them to such a state, that without speedy help, they expect nothing but death.

The Chirurgeon will know that it is a clot of Blood that is the cause of the Suppression, if the Patient hath been lately Wounded in the Kidneys, or hath missed Blood; if an Ulcer in the Kidneys has preceded, and the Patient hath made Purulent water, he may conjecture that a collection of thick and viscous Pus is the cause of it; if the signs of the Stone have appeared, he is to acquaint the by-standers with it, he may discern it from a *Fungus* by the Catheter, unless the Stone be wrapped in a Coat; he may know if it be a Carnosity or Callosity, by means of the Catheter or searing Candle. I say nothing of the Patients manner of living, whose excesses may have been the cause of sharp Humours, or a great inflammation; nor shall I neither speak of other causes which manifest themselves. Now if many causes of Suppression joyn together, the diversity

diversity of Symptoms will serve for a sign to make the Prognostick by.

The Patient cannot for many days endure a Suppression, without being much weakened and in danger. When it is caused by a falling down of the Matrix, there is no more to be done, but to reduce that part; when the *Hemorrhoids* press the Neck of the Bladder, they may be opened with a Lancet or Leech; the Numness of the Bladder is remedied by a grain of Salt or Nitre put into the passage of the Urine, or with a composition of *Mel Rosatum* and the Powder of *Hiera*, or the Oyl of Scorpions: when there is congealed Blood, Purulent Matter, or thick Phlegm in the Bladder, we may make use of an injection of *Oxymel* with the Oyl of sweet Almonds; in the Flagging of the *Urethra*, hollow Wax Candles are imployed; if there happen any Carnosity or Callosity in it, they are incised and eaten off, and afterward a Leaden Pipe introduced into the place. When one hath kept his water too long, if he be afraid of being searched, bags of Pellitory of the Wall  
moistened



moistened with the Oyl of Cypers, or of Turpentine are to be laid upon the *Papit*; and if he do not find ease upon that, he is to be perswaded to suffer the intromission of the Catheter. The inflammation of the Rectum, the Matrix and Prostates is allayed by Blood-letting, and Glysters of Onycrat, Pellitory Water, or the Decoction of it with *Mel Rosarum*, and a Bath of warm Water. For all suppressions of Urine, when there is no other apparent disease, it is of singular advantage to let Blood, give cooling Glysters and Bath; because commonly they are caused by meer inflammation, and the weakness to which the Patient is reduced, does often laxat the parts, and make way for the Emission of Urine, the retention whereof puts him in danger of Death.

*Galen* 13. of the *Meth.* before *Pneum.* L. 17. C. 37. advises not to give Diureticks, nor strong purgatives before Blood-letting; because they may accelerate the motion of Humours, or of Præternatural Bodies towards the Bladder, and fill it fuller, whilst the obstruction

of the Sphincter hinders the evacuation of the Urine.

But though all remedies have been used; yet sometimes the Patient is not eased; in that case if he cannot be searched, and the distemper be very urgent, it is better without delaying seven days, to bring him to consent to be cut, if he be troubled with the Stone. And if it be only Urine detained through an inflammation of the Sphincter, or by thick and viscid matter, it will be necessary to Prick or Tap the Perineum.

*Glycer and Bath; because common*

*they are caused by more inflammation*

**CHAP. XXI.**  
*Of the Puncture or Tapping of the*  
*Perineum.*

**I**T is to be supposed that the Patient hath found no ease from all the Medicines that have been administered unto him, and that the suppression continues with such Symptoms as give ground to a sad Prognostick, and call for speedy relief to the Patient.

*non Burfioo*

The great relation that there is betwixt *Lithotomy*, and the Pricking or Tapping of the *Perineum* gives us ground to propose three ways of Practising it; and seeing they have no proper names we shall distinguish them by those of the various Methods of *Lithotomy*, to wit, the High, the Great, and the lesser Operation.

Though it hath been said, that the High Operation is not in use, nevertheless it would seem that the great Tumor above the *Pubis*, caused by the suppression of Urine, especially in an extenuated Patient, might render the Operation easie, without any fear of hurting the parts of the lower Belly; and that for that purpose, having Prickt the Tumor with a Lance as deep as the Bladder without Tying the Patient, it will be sufficient to introduce a Wire or Stilet, that may serve for a conductor to a crooked and convenient Pipe, passing it into its cavity.

The High Operation of Tapping the *Perineum* may likewise be practised by means of a Trocart with which the

Punction may be made in the Tumor above the *Pubis*; it may be certainly known when the Bladder is open, & then a Wire is to be passed into it; and having pulled out the Trocart, the Wire will serve for a Conductor to the Pipe, just so as to the Parakentesis or Tapping of People in Dropsies. We shall give the description of this Trocart, and of the manner of using it, when we come to speak of the third way of Pricking and Tapping the *Perineum*.

The second way that is in use: is the great Operation, as I have seen it practised by men of great skill and reputation, whose method I have followed. There needs no more but a Pipe or *Canula* mounted, a small Tent proportionated to the Cavity of the Pipe, two Plaisters, and two Compresses the one a little bigger than the other.

All things being in readiness, and the Patient seated in posture and held as for *Lithotomy*; to be more assured of the way that must be taken in making the Incision the furrowed Catheter is to be passed into the *Urethra* as far up as it

can go, without forcing any thing; if the inflammation be moderate, or if there be no carnosity, nor other obstacles, it is to be introduced into the Bladder: A Servant or the Chirurgeon himself may hold the Catheter, and he is to observe all circumstances as in cutting for the Stone, making the Incision lower than for *Lithotomy*, and shorter upon the slit or furrowing; into which he is to thrust the Bill of the Gorgeret, to introduce it the more easily into the Bladder. It is fit that the furrowing continue like a gutter, without any thing to stop it at the Bill or Extremity of the Catheter; the voiding of Urine is a certain sign that the Gorgeret is in the Bladder; and then the Catheter is to be disengaged and softly pulled out. The Chirurgeon is to hold the Gorgeret in one hand, and in the other, the Tent or Pipe mounted with the end dipped in Oyl, and he is to conduct it into the Bladder, by means of the Gorgeret, or in defect of that, if it be come out of the Bladder, he may take the Button with a Scoop, and use it as



hath been said already. If there be a  
 Burton, one may make use of a  
 Wire, which being introduced into the  
 Bladder, will serve for a conductor to  
 the Tent or Pipe.

Though one could not pass the  
 narrow Catheter into the Bladder before  
 the Operation, yet it will easily enter  
 after the Incision, because that little  
 Blood that is spilt, will dissipate the  
 Spirits which caused the inflammation  
 and tension in the parts.

*Tavenin* Chap. 121. of his Operations  
 proposes, not to introduce the Catheter,  
 but the Patient being put into a posture  
 to make the Incision with a *Bistoury*  
 betwixt the *Anus* and *Scrotum*, on the  
 side of the Seam or Suture, in the same  
 place that it is made in for *Lithotomy*,  
 being come, (says he) near the Bladder,  
 it is to be opened, thrusting the  
*Bistoury* or Lancet boldly up, until the  
 the Urine come out, then the Tent  
 introduced, and so the Operation is  
 accomplished.

It is not convenient to evacuate  
 the Urine, if it was excessive in quantity,  
 because

because too great evacuations are always hurtful, according to *Hippoc.* Book 2. of his Aphorisms; but having voided as much as may consist with the strength of the Patient, with a little piece of Linen Cloth one may stop the Orifice of the Tent or Pipe, and having put a Compress upon it, some Body is to hold his hand thereon, assisting the Patient to bed; then lay upon the Tent a thick Pledget covered with Astringent, a little Plaister; another moderate Compress, and over that the Triangular Plaister covered likewise with Astringent, and another Compress still upon the Plaister, a Truss to bear up the Cods, and the Frond or double T. with the Thigh-band, as hath been described. The bandage that is only contentive, hinders not but that a little Urine may come out; nevertheless when the Patient hath rested and taken refreshment, he is to make Water through the Tent without pulling of it out.

In dressing the Patient the Chirurgion is to examine if it be a *Fungus* which caused the suppression; and he may

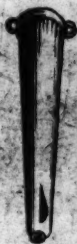
know that, by the Finger or the straight Catheter, by inspection into the matter that is voided with the Urine, or by the injection of warm barly Water, Detergives and the other Medicaments that are used in dressing such a Patient. If a Stone be felt, it is to be extracted with the Scoop, the Hook or the Forceps.

*Fungus's* are fetched off by injections, if it be an Ulcer, proper remedies for cleansing it are to be used. An inflammation is more easily cured than any other distemper, because many times it is kept in being by the retention of the Urine. When the cause of the suppression is removed, the intention of the Artist ought to be the reuniting of the parts: And therefore the Tent is drawn out, and the Patients are dressed like those that are cut of the Stone, according to the general cure, if no accident appear, or the particular method, by remedying every Symptome.

If the Catheter cannot be introduced into the *Urethra*, or if the Patient will not admit of it, the Operation is more Laborious

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Laborious; nevertheless seeing it is a pressing distemper, for the prolongation of life, there is a necessity of Operating after another manner, to wit, by the high operation that hath been mentioned, or after that way to which hath been given the name of the lesser Operation for the Pricking or Punction of the *Perineum*: for that end one may make use of an Instrument called *Trocart*, *rigida* Stilet or Wire, and a Tent or Pipe mounted. I invented this Trocart above five years ago and this is the Figure of it.

This Trocart may be made of various kinds of Metal, excepting the point, which ought to be of Steel; it is seven or eight Inches in length, that it may be the more commodious for use, and as big as an ordinary quill: in the shape of it several things are to be considered; for the end of it which is of Steel, is of a Pyramidal and Triangular Figure. This point is about a Fingers breadth in length; in one side of it there is a furrowing that reaches from the point, or very near it, to the other end of the Trocart,

Trocart, and because of that furrowing the Instrument in its length represents a straight Catheter for making Incision, because it is hollow on the one side and round on the other, which is the out side of it. The Pyramide of Sten rapors and grows smaller from the base till ye come to the point, but from the base to the other end of the Trocart is alike in bigness.

The Wire or *Stilet* is straight, indifferently small, of the same bigness all along, and supple and pliant, about eight Inches long, proportionable to the furrowing of the Trocart.

The mounted Tent, that is used in this Operation, may be crooked for the high and straight for the lesser Operation in the Punction of the Bladder, long and small in proportion to the Grossness and Age of the Patient, that so the end may be thrust into the Bladder, without making too great a *Solutio Continui* it is to be observed that the end of the Tent, where its eyes grow, ought to be proportioned to the middle part of the Pyramide of the Trocart,

that

that it may easily enter into the Orifice of the Punction, and that the body of that Tent be of a Conick Figure, growing bigger and bigger by degrees, as it comes nearer the head where the Rings are, though the extremity of the Tent, were smaller, yet it might suffice for conveighing of the Urine; but it would be useless, if some more thick and viscidous matter were contained in the Bladder.

In using of these three Instruments; when the Patient is situated in the posture that hath been said, the Cods are lifted up, and having marked the place where the Punction is to be made in the *Perineum* on the side of the Seam or Suture, the Trocart is thrust in, and sinking the end by which it is held, the slit or furrowing being upwards, the Pyramide is to be thrust on forwards towards the Body of the Bladder, which being much distended, is therefore easily opened.

So soon as the Trocart is within, the Urine will come running out by the furrowing, and the Wire is to be taken, and

and conducted into the Bladder by the same furrowing; afterward the Trocart is drawn out, in place whereof, holding the Wire in one hand, the Tent mounted is to be taken, and passing the Wire into its Cavity, it is to be made to slide along the same. When the Tent is near to the *Perineum*, the Wire is to be taken by the end, and the Tent at the same time conducted into the Bladder, we may know that it is in, when the Urine comes out at its Cavity: And then the Wire is pulled out; and as much Urine suffered to be voided as may be thought convenient, other things being to be performed as in the other manner called the great Operation. This Trocart has one thing that is singular, which is, that so soon as the extremity of its slit is in the place where the Water in the Urine is voided, without any danger of being thrust too far in.

There are some who make use of another Trocart for the same Operation, this has a solid and round point of Steel about a Fingers breadth in length; others cause it to be made Triangular, or a little flat and

two-edged; but still proportioned to the Tent or Pipe, the instrument in its length is streight and hollow, and has two openings near the basis of its point; that Instrument is passed into the Tent, and in that posture the puncture is made, the opening of which is always less than the Orifice of the Tent; and it cannot be introduced without great pain to the Patient; besides, this Trocart must be Thrust deeper in than the other, before the Urine can be perceived to come out. All men are free to examin and try those things, and to choose what pleases them best.

These Trocarts may serve for other Operations, as in a kind of Hydrocele, where the Waters are gathered together, without being stilled into the very substance of the Membranes; in the Parakentesis; or even in making perforations through the Skin, and passing the Silk and Stones because about three or four fingers breadth from one end of the Trocart that was first described, a hole may be made like the eye of a great Needle through which the Silk may be passed.

Every



Every time that it hath been used, it must be new set, for the Urine blunts the edges very much. It is good to practise such kind of Operations upon dead Bodies: for that end, one must with a Syringe Squirt as much matter as possibly he can, into the Bladder, then tie a Ligature about the Yank, and make the Punction as hath been described, and then make a dissection of the Bladder, to observe what hath been done, that so he may take his measure for another time.

We may avoid offending the Rectum by conducting the point of the Puncture towards the Bladder, which then is much distended, and we need not fear to open it in the Body, because these Wounds are not absolutely Mortal. And though they are said to be harder to consolidate in the Membranous part thereof, nevertheless we should banish such apprehensions, because we see by experience that they are cured, and that the business is to save the life of a dying Man.

They to whom Fistula's do remain after the Punction of the *Perineum*, make use of a Tent which they cause to be opened, and stopt now and then for the voiding of the Urine: they may be made to stop with a Screw for greater security. The ends of the Linnen Cloth or Languet of the Tent; are tied the one before, and the other behind to a Girdle, held up by a Collar, like those which have been described when we spoke of the bandage of the Yard for a *Rhimos* Chap. X. If some Symptom of *Lithotomy* succeed the Punction of the *Perineum*, it is to be remedied according to its kind; and when none appear, or if they be cur'd, the Patient and Chirurgeon may have good hopes, and both doing their duties, with external assistances the *Lithotomy* and Punction of the *Perineum* are brought to a perfect cure. Nevertheless what care soever the Chirurgeon may have, and how obedient, confiding and quiet, so ever the Patient may prove, assisted as he ought to be by those who attend him, and the administration of proper Medicines

Medicines, yet sometimes he hath the trouble to be incommoded by the other distempers contained in the following Chapter.

## C H A P. XXII.

*Of diseases that happen after cutting for the Stone, and of the way of curing them.*

**C**U T of *Chauliack* in his second Treatise says, that if there be no Metastasis of the Humours into Apoplexies, they are terminated by Discussion, Suppuration, Obduration and putrefaction and afterward he speaks of the manner of treating and curing them. This shews that there is a difference between their term, their curing and their cure, the end of one disease may be the beginning of another; the cure hath an uncertain end, though healing be that which is proposed according to Art; we see but too many instances of this in those that are troubled with the Stone, that evil is terminated by the extraction of the Stone; and that Stone taken

out, or that the distemper ended by the Operation; produces a Wound, or other accidents, the cure of which is necessary; and which nevertheless do not always terminate in a cure, but sometimes in a new Stone, a Fistula in the *Perineum*, an involuntary spilling of the Water, a preternatural voiding of excrements, or in many diseases together; they have each of them their Causes, Differences, Signs, Prognosticks and Ways of Curing.

We shall say nothing as to the Stone which may be observed after that the Patient hath been under cure; we must only take notice that the cause of it may be this, that there is a Quarry in the Kidneys, which from time to time furnishes the Bladder with Stones, and then the Operation ought to be delayed, unless the Patient be fully recovered in strength, the season be favourable, or that the accidents be remedied; And above all the Patient had need of a very great stock of resolution to endure a second cutting.

The Fistula in the *Perineum* where-  
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of we speak is a Sinuous Ulcer below the *Scrotum*, with a Callosity along the length of it, by which the Urine issues out. It is caused by the Chirurgeons fault, or by the Patients, by the supervening of accidents, or indeed by many things concurring, when the Chirurgeon and Patient do not do their duties, and that bad and violent Symptoms appear in the time, or a little after the Operation.

By the fault of the Chirurgeon; when in the beginning he suffers the Lips of the Ulcer to be too soon joyned together, before he be certain that the Bottom of it is deterged and agglutinated, or because no accidents appearing he hath dilated the Bottom of it too much, and that he hath not had care after the first eight or ten days at most were over, moderately to Compress the bandage, and to make use of small and very narrow Compresses laid upon the two sides of the Incision.

On the part of the Patient, when his Urine being too sharp corrodes the *Urethra*, and hinders the reunion, or that he lies not still as he ought, not observing



following Directions, and not suffering himself to be treated according to the rules of Art; to which must be added, his being emaciated, the abundance of Urine, and if he moderate not his passions, or exceed in his food, the superfluities whereof causes a too long suppuration.

The most remarkable accidents that contribute to the Fistula, are a Putrefaction, which causes great loss of substance in the *Urethra*, and adjoining parts; an Ulcer in the Bladder, or Kidneys, the suppuration whereof requires that the parts be kept dilated.

The differences of these Fistula's are drawn from hence, that some of them are even and straight from the Skin to the *Urethra*, without any other profound or superficial sinuosity, and are apparent on the side of the seam; others have their Orifice in the *Rectum*; some are accompanied with great loss of substance; others have one or more sinuosities in the *Urethra*, and in the neighbouring parts; or otherwise they happen in a bad subject; and these differences are

discovered, if it be observed in time of dressing the Patient, that thirty or forty days after the Operation, the Ulcer cicatrises, except one or more little passages, or a small Lump or Tubercle, which is named, *the Pullet's rump* on the side of the seam, through which the Urine escapes; or if the Patient being much extenuated, the superveneing accidents have caused a great loss of substance in the *Urethra*, or that new Flesh cannot breed; the issuing of the Urine by the *Anus* makes it apparent that the *Orifice* of the *Fistula* is in the *Rectum*.

All *Fistula's* in the *Perineum* are not alike hard to be cured; for the first kind may be taken into cure, provided there be no great loss of substance, and that the subject be good, the rest being commonly incurable; some of those who are troubled with *Fistula's* have this comfort that they do not always run. If the subject be good, not too lean, and the Ulcer filled with well conditioned Flesh, the cure of the *Fistula* may without interruption be undertaken: but if the Patient be extenuated, or if there be  
great

great loss of substance in the *Urethra* with Callous Flesh, the cure is not to be attempted, until the strength be restored, that it may be tryed if new Flesh can be procured. In that case he must be comforted, giving him hopes that at another time he may be cured. Those that have their *Orifice* in the *Rectum* are sometimes less troublesome and they are not to be tampered with.

For curing of the *Fistula*, we shall not speak in this place of the universal regiment, we suppose that to have been observed, either whilst the Patient was under cure for the Stone, or since, but we shall only treat of the particular management of that cure. Authors speak of Potions and many Topical Medicines for the cure of *Fistula's*: but since my design is only to describe what I have observed to have been successful, I can affirm that many have been cured by the following means; which consists in introducing into the Bottom of the *Fistula*, a Catheretick Trochisque described in the last Chapter; next the falling off of the *Escar* is to be procured

red by Basilicum; and then the Patient is to be dressed like one that hath been cut of the Stone after the seventh or eighth day; some make use at the same time of a desiccative Wax Candle, which they thrust into the Yard up to the bottom of the Fistula; others cure them without the use of Wax Candles; when any accident appears, it is to be remedied, as hath been said Chap. XIX.

If those that are fistulous are to be pitied, they who are troubled with an involuntary emission of their water by the *Urethra*, ought also to be ranked amongst the Miserable, as those also, who piss not at all: But they from whom the gross Excrements drop against their will, surpass the rest in Misery. What may be said then, if one should suffer many of these Inconveniences at the same time?

The spilling of the Water is caused by a Palsie in the Sphincter of the Bladder, by the Incision of its Fibres, or by a great Dilaceration, when a big and rough stone hath too much widened the Passage, and hath caused a Suppuration of long continuance.

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The Kinds and Differences are taken from the Greatness or Smalness of the Emission; the Signs of it are visible, or rather most sensible and uneasie to the Patients, because Shame and Vexation hinders them sometimes from seeking a Remedy; from whence the Prognostick may be made, That all of them are extremely hard to be cured, the most part incurable; and that the Cure most commonly is but palliative.

Women are not subject to Fistula's, but only to this spilling of their Water, which is more uneasie to them, than to men, because of the Conformation of their *Urethra*, and that their Sex which hath Modesty for its Property, obliging them to a greater reservedness, hinders them from seeking relief: and this makes them to have Clouts or Sponges about them to receive the Water, or to employ something else, that Necessity and Uneasiness suggest to them.

When the Spilling of Urine remains with men, they may have recourse to a little Engine, such as I saw in the Possession of a Person, whose Character and



Quality allows me not to name him; I have heard him say, that it was very useful and commodious for him.

That Engine is made of Steel, Iron, or any other convenient Metal: It is composed of two parts, each about three Inches long, and a Fingers breadth wide; one of the two pieces bends a little in its Longitude, and the other is straight: these two pieces joyn together at one end with a turning joynt like a Compass, and at the other end both are bent backward to fasten within one another, so that pressing with the Finger, they may be opened and shut. These two pieces are covered with Linnen, as much, or as little as one pleases; afterward the Yard is put into that Instrument, observing to keep the crooked part uppermost; and when one hath made water, it is shut: the Compression may be made as slightly as one pleases, covering or facing the Engine more or less, that it may be suffered without Pain, & letting the Urine pass through, which in some manner supplies the action of the Sphincter of the Bladder.

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of Boxes of White Lattin, or other Vessels of Leather made in form of an Urinal, tied to a Girdle, and wherein the Nut always hung, which is not done without Pain and Trouble. There is another Instrument much like to a Truss, for ruptures; it is made like the Steel Trusses, having a Girdle of the same Fashion, and on the left side, in stead of a Bolster, the end of the Girdle bends Elbow-ways downwards, and terminates in the shape of a small Iron Plate, which is covered with Felt, Leather, or Cork, sufficiently waxed over, that it may be of a convex Figure like an Olive, and indifferently hard, that it may exactly answer to the *Urethra* above and near to the place where the Incision hath been made. When the Bandage is applied, the little Eminence presses the *Urethra* below the Cods, and to keep it firm, it is made fast by the other end, where there is a strap of Leather of the same fashion as in the Steel Trusses for Ruptures; and besides, if a man were troubled with a falling down of the Intestines, one of these Trusses might be made on purpose for him, where

where there might be a Bolster for the Rupture, and the little eminence for compressing the *Urethra*, and hindring the shedding of the Water. Though this Bandage or Truss be in effect only for a palliative Cure of this Distemper, yet it may sometimes serve for a real Cure, because hereby the parts gather strength, and are corroborated,

There is another kind of Bandage still the Girdle whereof is made of Fustian, and that part which is to pass upon the *Pubis* of a piece of Wood of the length and bigness of the Patients Finger, covered with Fustian and Wax, betwixt which and the *Pubis*, the Yard being compressed, lyes along looking upwards; that Posture hinders the spilling of the Water: The same Bandage hath Points fastened to the fore part of it, that they may be carried betwixt the Thighs, and tied side-ways to the Girdle, that so the Bandage may not rise too high.

Involuntary voiding of the Excrements is caused sometimes by the Chirurgeons Fault, if in time of Lithotomy he make the Incision too low, and if

he cut the *Rectum*, especially in the lesser Operation, if he take not good heed; most frequently the violent Motions of the Patient contribute to it, but much more Putrifaction, Abscesses, or other Accidents that follow the Operation.

Their Kinds, Signs, and Prognosticks, are taken from the more or less Ejection of the Excrements by the remaining Fistula, which is far more uneasy than the spilling of the Water, or the Fistula alone. The Cure of this stercoral Excretion is impossible, when it is caused by Incision of the upper part of the Sphincter of the *Rectum*, or when there is great loss of Substance; if any pretend to take such Patients into Cure, they are to observe the Method of curing Fistula's in the *Anus*.

We need not enlarge to prove, that these kinds of Distempers may have several Causes concurring at the same time; when many of these Indispositions happen together, we must have our recourse to the Method of curing complicated Distempers, as well for the Prognostick Part, as for the order of the Complications.

CHAP.

## C H A P. XXIII.

*Of Medicines to prevent the Stone, for voiding of the Stone, and of Medicaments for dressing those that are cut.*

**T**Hough we promised to enquire into the Medicines that may prevent the Stone; we must, however, confess, that it is very difficult, and perhaps impossible to determine precisely where in they do consist; because the most learned in natural Discoveries, speak only in general of the Figures of Bodies, and Microscopes have not been able to make known the particular Nature of every one, nor yet of all their Pores. Possibly we might succeed without observing all these Particularities; for though Enquiries into Nature were pursued to that very point, yet still there would be causes that did not depend on us, and which might form the Stone; the Bigness, Figure, Number, and Motion of the Particles of Bodies of which we are composed, and of those which serve us for Food, are no ways in our power; though these things be sufficient to produce



duce in us the Maladies that we fear, if the Secretions and Excretions be not performed according to the Course of Nature. That we may reap Benefit from the Miseries of others, it is to be considered, that they who are most subject to the Gravel or Stone, live after such a manner, as may be avoided, or at least corrected by other means; and seeing we have spoken of fenny and marshy Places, gross and thick Air, calculous Food, muddy Waters, and of the Excesses that may much debilitate the Parts of the Body, they are carefully to be avoided, using moderately those things that are for our Nourishment, following Exercises suitably to our strength, without affecting too much Niceness and Delicacy: It were better to use a little too much, than not enough; because Life consists in Action, and men love themselves too well, not to repose and take their Rest; if we be not guilty of Excesses, the Parts of our Body continue in good Health, ready to resist all attacks.

Though few things contribute more to the forming of the Stone in the Bladder,

der, than continuing long without making of Water, yet we must not at first give Diureticks, but only gentle Purgatives to empty the Intestines and adjoining Parts: of that kind are *Manna*, *Cassa*, *Catholicum duplex*, *Lenitive Bleedary*, *Diaprunum simplex*; a day or two after, *Turpentine* prepared in this fashion, may be given in drink: Take an Ounce, or Six Drachms of the best *Turpentine* washed, dissolve it in a Mortar with a little of the yelk of an Egg, then add to it two or three ounces of the Water of Winter-Cherries, Smallage, Pelletory of the Wall, or of some other Liquor, according to the Nature of the Disease, and the state of the Patient: Stir all together that it may be exactly mixed, and become of so white a Colour, that it looks like Cream or coagulated Milk. *Bever.*

C. XI. of the Stone of the Kidneys and Bladder. The Bath gives ease to those that are troubled with the Stone, and contributes much to the bringing away of little stones that stop in the Kidneys and Bladder.

The use of the following Ptisanne, or Barley-water, is very good against the same Distempers: It is made with an Ounce of *Linseed*, and the Roots of Mallows and Marshmallows, of each two Ounces, put into five quarts of water boyled away to four; into three Ounces of this Ptisanne may be dropped four or five Drops of the Spirit of Sulphur, and it may be made stronger by augmenting the Dose of the Ingredients in the same quantity of water: It is approved of for making one void Water, mitigating Pain, and bringing away Stones.

The two following Receipts were given me by *Monsieur Jonnot*, the first of which, he told me, hath often (to his Experience) been successful in easing Nephritick Pains, and those who are subject to void small Stones; and that the second never failed him, provided the Stone be of a Bigness fit to come out of the *Pelvis*, or Basen of the Kidneys.

The first Medicine is to be taken in the Spring and Fall, every Morning for three days together. Take six Ounces of the Water of Pelletory of the Wall, an Ounce

Ounce of the Oyl of sweet Almonds, and an Ounce and a Half of the Syrup of Limons ; in case of necessity, it is taken at any time.

For the second Remedy, the Patient must be once or twice blooded, and twice purged with two or three Drachms of *Sena* infused overnight in the Decoction of Dogs-grass, Roots of Marshmallows, and a little bundle of Flax; to the Colature of which must be added an Ounce of cleaned *Cassia* for every Dose. The day after he is to make use of the following Limonade, and is to continue it three days successively in the waning of the Moon, fasting three or four Hours after.

Take of Argentine, or Wild Tansey, Water Lentils and Cresses, of each one Handful, let them boil half a quarter of an hour in a quart of water, when it is taken off the Fire, add to it the Juice and Rind of three or four Limons ; let all infuse together for the Space of four Hours, then strain it, and add thereunto three Ounces of the Powder of Sugar-Candy, and twenty Grains of the Spirit  
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of Salt: Keep it for the Use aforesaid.

The Garden-flags, or blew *Flower-de-luce* that grows upon Walls, infused cold into what quantity one pleases of White-wine, and an Ounce of the Infusion, taken for the first time by Children of ten or twelve Years of Age, brings away the Stone: The Dose is to be increased or diminished, according to the Age of the Patient and its Operation, giving always too little, rather than too much, for fear of drawing the Stones in too great abundance towards the Sphincter of the Bladder, which would cause a suppression of Urine. One may renew it two or three days after, and Purge by the Advice of a Physician. The use of White-wine, Raddish-water, and Wine made of the Fruit of Eglantine, or Sweet Briar, taken now and then, is good.

*Paracelsus*, in the end of the Preface to his second Treatise of his great Chirurgery, prescribes for remedying the suppression of Urine, the use of the stones that are found in the Heads of Crabs, beat into a subtil Powder, drank in the

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Juice



Juice or Water of Raddishes, and if the Patients do not thereby make water, to make a little bag of Saffron, and lay it upon the Kidneys, or the Belly, towards the passage of the Ureters, and upon the *Perineum*: Or to make a Powder of dried Acorns, and give it to be drank in the Water or Juice of Raddishes, in what quantity the Physician shall judge fit.

The two following Medicines are approved of for bringing away of Sand and small Stones. In the wain of the Moon, the Patient being Purged, let him take in the Morning the bigness of a Nut of fresh Butter, and swallow it down like a Pill; then let him take a sour Limon, and squeeze out the Juice of it into four Ounces of White-wine, let him drink that Potion a quarter of an hour after that he hath swallowed the Butter: This may be reiterated two or three days after, according to its effect, and then Purge again.

For the same effect, take a little white Onion, cut it into small pieces, infuse them over Night upon hot Embers in four Ounces of White-wine, and strain

it; having taken the same quantity of fresh Butter in the manner above directed, a quarter of an hour after drink of this Infusion; it is more violent than the former. The Butter is taken first, that the Stomack may not be stung, or too much pricked by the Wine, the Limon-juice, or the Onion: And it is to be observed, that if the Patient should but once take a greater quantity than these Doses prescribed, instead of giving ease, it would expose him to a suppression again, because these Medicines are very Diuretick, and carry rapidly along with them what they meet with in their way.

They say that Jet hath so much Vertue, that it is enough to hang it about the Arm, or to carry it in ones Pocket, to obtain ease of Nephritick pains, and to bring away the Gravel and Stone.

The cold infusion of Nephritick Wood is Excellent; put what quantity of that Wood you please into water, to which it will give a Tincture; take of it two Glasses in the Morning, and one at Night, or at any other hour of the day, if the Stomack be empty; this Medi-

cine asswages the pain, and brings away Sand.

*Pareus*, Book 17. Chap. 37. describes the following Broth, and says, that he hath by Experience found it to be of marvellous Efficacy for hindring the forming and confirming of the Stone. Take a Cock and a Knuckle of Veal, boyl them in water with a handful of Barley, Parsley-Roots, Sorrel, Fennel, Sichory, Butchers-broom, of each an Ounce; the four cold Seeds bruised, of each half an Ounce; towards the end, add Sorrel leaves, Purslain, Lettice, Mallow-tops, and *March Violets*, of each half a handful; and then keep the Broth, of which the Patient for four Mornings together fasting, shall take about half a Pint with a little of the Juice of a Limon, making it boyl one turn over the fire, every time before it be taken; you will quickly see, says he, a wonderful Operation, and it is a Medicamental Aliment.

In the same place he gives the Receipt of a rare Powder against the Stone.  
*Rx Nucleorum mespil.* Unc. 1. *Pul. elect.*  
*Diatrag.*

*Diatrag. frigidi*, Drach. 2. *Quatuor seminum frig. majorum mundatorum*, *glycyrisæ rasæ* ana drac. 1. *Sem. Saxif. dr. 2.* *Seminum milii solis*, *genistæ*, *pimpinellæ*, *brusci* & *asparagi*, ana Scrup. 1. *Seminis Altheæ*, dr. 1. *semis. Sacchari albissimi*, *Unc. 6. fiat pulvis.* This Powder is to be taken the first days of the New Moon and First Quarter, of the Full Moon and Last Quarter; and so for all the Months after, to the quantity of a Spoonful in the Morning three hours before eating. For the same Effect he prescribes the following Powder. *Rx Coriand. præp. scrup. 4. Anisi, Marathri, granor. Alkekengi, Milii solis*, ana drach. 2. *Zinzib, Cinnamomi*, ana scrup. 2. *Turbith Elect. drach. 1. Carvi scrup. 2. Galang. Nucis moschatæ*, & *lapid. Judaici*, ana scrup. 1. *Foliorum Senæ mundatorum ad duplum omnium, Diagredii dr. 2. Semiss. misce & fiat pulvis.* Dosis erit ad drach. 1. *Cum vino albo. Capiat æger tribus horis ante prandium.* Glysters for asswaging Nephritick pains, are to be made of the Decoction of Lettice, Scariole, Purslain, the Flowers of Violets and Nenuphur,

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Melilot, Camemile, Dill, the leaves of Mallows, Marsh-mallows, Bran, and Linseed; and in the Colature is to be dissolved cleaned Cassia, a little Sugar, yolks of Eggs, and Turpentine, which is a Sovereign Remedy.

*Beuerovicus* speaks of a great many Medicines; but seeing he may be consulted, we shall here wave the Description of them, and speak only of Medicines that are used after the Operation, and for Remediying the Symptoms.

They have nothing that is particular, but that they ought to be more moistning and humectant than for the other parts. Every Chirurgeon makes his Astringent Powders, and other Medicines to resist Putrification, and breeding of new Flesh. Sometimes the Rumps of Pullets are dryed with a little Rock Allom Calcined, and scraped Lint; or else there is added to it the Powder of Burnt Lead malaxated with a very little Diapalma, or *de minio*: A very good Epu-  
lotick is made with an Ounce of Pompholix, half an Ounce of the Plaister *de minio*, two Drams of Rock Allom  
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Calcined, all incorporate together. In like manner a very good Desiccative may be made of Bole Armoniack and the Litharge of Gold, of each an Ounce; the Salt of Saturn, and *Crollius* his Medicamentall Stone, of each a Dram; all being reduced into a Powder, they are to be made into an Unguent with a sufficient quantity of the Oyl of Roses.

To remove the Callosity of Fistula's, one may make use of the Powder which is found at the bottom of Sphagedemick Water: You may take what quantity you please of that Powder, let it dry in the shade, and then grind it upon *Porphyry-stone*, or Marble; add thereto a little Water, in which Gum Arabick hath been dissolved, and make it up into long and small Trochisks of divers shapes.

A more violent and efficacious Cathetick for the same purpose may be made of equal parts of Corrosive Sublimate, and Rock Allom Calcined, a little Opium and Saffron; all must be pounded together, and to give it a Body, add as much Gummed water as is necessary, and make it into Trochisks according to Art.

We ought not to forget the Description of the Liniment of *Arceus*, which in Dressing serves for a Digestive: Thus it is described. *Rx Gummi Elemni & rebinthinæ abietinæ ana Unc. 1. Sem. fœcastrati antiqui & liquefacti, Unc. 2. Pinguedinis Porcinæ Unc. 1. Misce & ad usum Linimentum facito.* *Arceus*, in his first Book of the good Method of Curing Diseases, says, that this Medicine is of so great Vertue, that with half an Ounce of it one may Cure the greatest Wounds, provided no Accident supervene; sometimes they add to it as much of the Oyl of *St. Johns-wort* as is thought convenient, according to the intention that is had in using it.

*Pareus* gives the Description of the Oyl of Eggs, pag. 752. Take the Yolks of hard Eggs, rub them betwixt your Hands, and fry them in a Frying-pan over a gentle fire, stir them with a spoon until they become red or tauny, and the Oyl come from them, then put them into a Hair-cloath, and press out the Oyl, as that of Almonds, and keep it for Use.

Here

Here we may subjoyn the Description of Harts-horn Jelly, which is Excellent against the Looseness that happens to those that are cut of the Stone; it is made of two Ounces of the shavings of Harts-horn, and as much of Ivory, which are to be boyled in a quart of Water untill the Juice of them be Extracted: Then the Decoction is to be strained through a Cloath, and the Colature clarified with the white of an Egg, adding thereto a little of the Juice of Limon, white Sugar, and Cinnamon; the Colature is to be set over the fire again, and when it begins to boyl, a white scum will rise, then a little White-wine is to be put into it to settle the scum, and a little after, when the scum rises again, some more White-wine is to be put into it; the Humidity is to be let evaporate, until one perceive that the Liquor becomes Gléwy, then it is to be taken off, and quickly strained through a clean Linnen Cloath, and put into Vessels, to be kept for Occasion: A Spoonful or two of it is now and then to be given to the Patient, to stop his Looseness.

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### Twelves.

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